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AMERICAN

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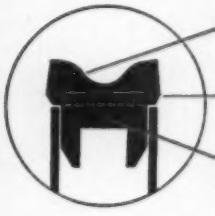

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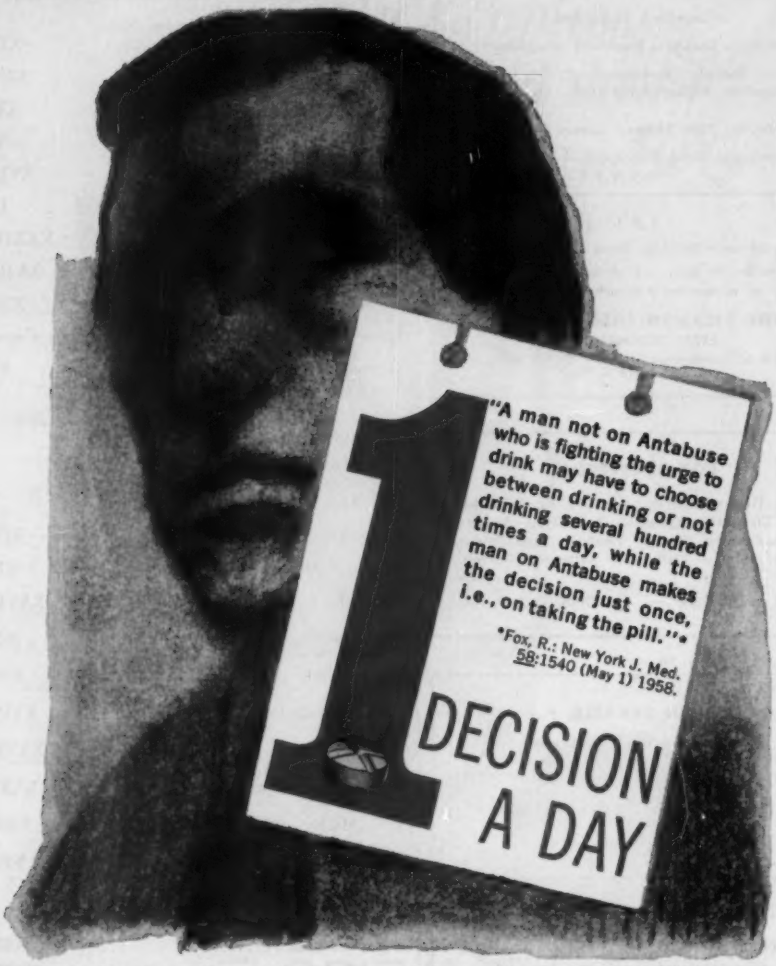
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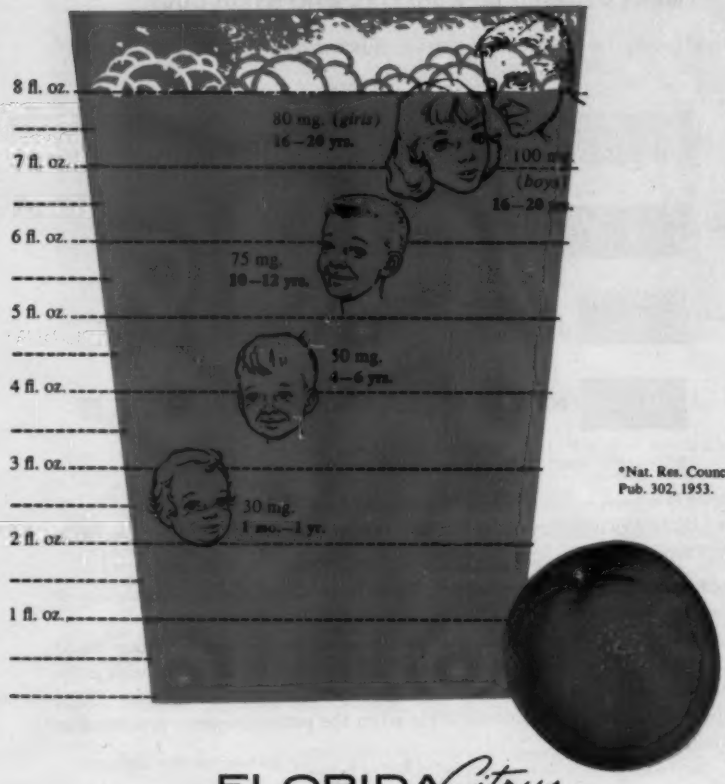

*Nat. Res. Counc., Pub. 302, 1953.

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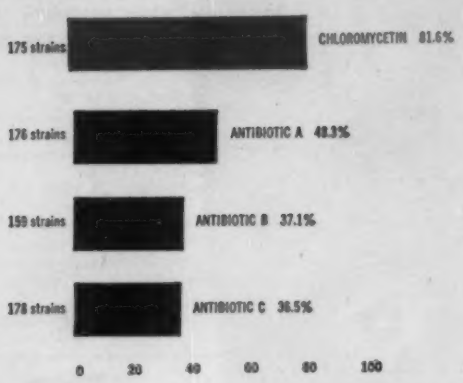

*Adapted from Suter, L. S., & Ulrich, E. W.: *Antibiotics & Chemother.* 9:38, 1959.

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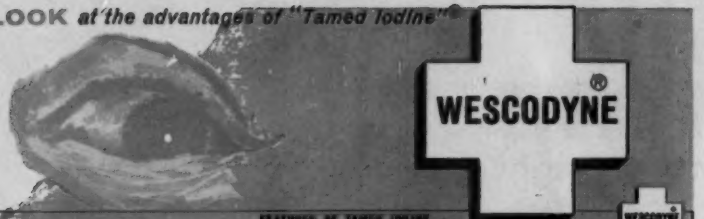

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Affected by Hard Water	No	Yes	Yes	Yes	In some cases.	No
Indicator of Bacterial Efficiency	None	None	None	None	None	Color
Effect on skin, full strength	Irritants	Sensitizers	Irritants,	Non-irritating	Irritants	Non-irritating
Toxicity	Yes	Variable	Yes	No	Yes	No

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While tranquilizers have had some measure of effectiveness in many of these areas, NIAMID now gives the [illegible] physician a new, safe drug for the specific treatment of depression without the risk of increasing the depressive symptoms.

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The absence of toxicity may be the result of the [illegible]carbamide group in the NIAMID molecule. This structure may explain why NIAMID is excreted largely unchanged in the urine, with only insignificant quantities of potentially free hydrazine being formed. Previously, where a monoamine oxidase inhibitor had been associated with hepatic toxicity, there was some evidence that substantial quantities of free hydrazine were formed in the body.

Background of NIAMID

A major advance in the treatment of mental depression came with a newer understanding of the influence of brain serotonin and norepinephrine on the mood. Levels of both these neurohormones are decreased in animals under experimental conditions analogous to depression; relief of these model depressions is seen with a rise in the levels of both serotonin and norepinephrine.

A second advance came with the development of monoamine oxidase inhibitors, substances which raise the cerebral level of both serotonin and norepinephrine. The first of the amine oxidase inhibitors raised the cerebral level of serotonin, but did not appear to raise norepinephrine levels proportionately.

[illegible]

Attention at Pfizer Research was then directed to a new drug that would overcome this disadvantage. NIAMID significantly raises the cerebral level of *both* serotonin and norepinephrine under experimental conditions.

The dramatic discovery of NIAMID now makes available an extremely effective, safe antidepressant for the successful treatment of a full range of depressive states.

Precautions

Side effects are most often minor and mild manifestations of central nervous system stimulation, modifiable by a reduction in dosage; these may take the form of restlessness, insomnia, headache, weakness, vertigo, dry mouth, and perspiration. Care should be taken when NIAMID is used with chlorothiazide compounds, since hypotensive effects have been noted in some patients receiving combined therapy—even though hypotension has rarely been noted with NIAMID alone. There has been no evidence of liver damage in patients on NIAMID; however, in patients who have any history of liver disease, the possibility of hepatic reactions should be kept in mind.

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Start with 75 mg. daily in single or divided doses. After a week or more, revise the daily dosage upward or downward, depending upon the response and tolerance, in steps of one or one-half 25 mg. tablet. Once satisfactory response has been attained, the dosage of NIAMID may be reduced gradually to the maintenance level.

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Each such transfer also saves public health dollars. One large city saves some $2.50 a day for each welfare patient switched to Orinase from insulin injections administered by a public health nurse. Why not make sure that your health department doesn't overlook any of the public health implications of Orinase?

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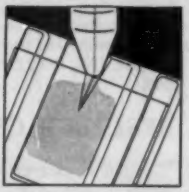

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What IS The Truth About Dietary Fats?

Recently a great deal of interest has been aroused on the question of a possible etiologic link between the ingestion of food fats and pathophysiologic changes in certain body tissues.

Basic research on this problem is being carried on throughout the world, the approach ranging from animal experimentation to biochemistry, to ethnological statistics.

In a number of instances the lay press has prematurely reported the findings of one research group or another, *without the benefit of unbiased competent evaluation.* Some scientific as well as lay articles have attempted to correlate inconclusive, fragmentary, and conflicting results, frequently leading to undesirable confusion.

The problem, however, is far from settled. If final results of this world-wide research establish beyond reasonable scientific doubt that fat intake is directly related to degenerative disease, accurate information should be provided for the profession so that in turn the public may be properly enlightened.

On the other hand, if conclusive evidence points to little or no etiologic relationship between fat ingestion and degenerative disease, it will become difficult for the scientific world to counteract the cumulative effects of misinformation on the public mind.

Furthermore, evidence is accumulating to indicate that lowering of the plasma cholesterol by limitation of dietary fat and by administration of unsaturated fatty acids may actually increase the deposition of cholesterol in the tissues.[1]

The obvious need at present is for basic research and proper evaluation as well as unprejudiced correlation of findings from all quarters, so that the medical profession as well as the public may be protected from the publicizing of premature and unwarranted conclusions.

---

1. Kuhl, W. J., Jr., and Cooper, J.: Exchangeable C^{14}-Cholesterol Pool Size as an Index of Cholesterol Metabolism: Effect of Low Fat and Highly Unsaturated Fat Diets, Proc. Cen. Soc. Clin. Res., J. Lab. & Clin. Med. *52*:919 (Dec.) 1958.

STATEMENT BY NATIONAL RESEARCH COUNCIL

"A large amount of information has been made available in recent years relating fats to the causation of atherosclerosis, coronary artery disease, and other similar diseases. However, the data are so incomplete and conflicting that it is impossible to draw conclusions which are universally acceptable to nutritionists and medical authorities."

"Until it is clearer which fats are more desirable nutritionally and which, if any, are undesirable—major changes in American dietary habits are not to be recommended."

•

The Role of Dietary Fat in Human Health: National Academy of Sciences—National Research Council, Washington, D. C., Publication 575, 1958.

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In 8 out of 10 patients
Complete Control of
Grand Mal Seizures
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Composite Results of 20 Clinical Studies

[redacted]

Type of Seizure	Number of Patients	Completely Controlled	50-90% Improved	<50%
Grand Mal	214	172 (80%)	15 (7%)	27 (13%)
Psychomotor	29	19 (65%)		10 (35%)
Focal Jacksonian	19	19 (100%)		

[redacted]

Type of Seizure	Number of Patients	Completely Controlled	50-90% Improved	<50%
Grand Mal	613	175 (28.5%)	253 (41.2%)	185 (30.3%)
Psychomotor	130	10 (7.7%)	65 (50%)	55 (42.3%)
Focal Jacksonian	92	14 (15.2%)	36 (39.1%)	42 (45.7%)

The dramatic results obtained with "Mysoline" advocate its use as first choice of effective and safe therapy in the control of grand mal and psychomotor attacks.

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recommended dietary allowances* and the nutritional contribution of a moderate low-fat breakfast

Menu: Orange Juice—4 oz.;
Cereal, dry weight—1 oz.;
Whole Milk—4 oz.; Sugar—1 teaspoon;
Toast (white, enriched)—2 slices;
Butter—5 gm. (about 1 teaspoon);
Nonfat Milk—8 oz.

Nutrients	Calories	Protein	Calcium	Iron	Vitamin A	Thiamine	Riboflavin	Niacin equiv.	Ascorbic Acid
Totals supplied by Basic Breakfast**	503	20.9 gm.	0.532 gm.	2.7 mg.	588 I.U.	0.46 mg.	0.80 mg.	7.36 mg.	65.5 mg.
Recommended Dietary[1] Allowances—Women, 25 Years (58 kg.—128 lb.)	2300	58 gm.	0.8 gm.	12 mg.	5000 I.U.	1.2 mg.	1.5 mg.	17 mg.	70 mg.
Percentage Contributed by Basic Breakfast	21.9%	36.0%	66.5%	22.5%	11.8%	38.3%	53.3%	43.3%	93.6%

*Revised 1958, Food and Nutrition Board, National Research Council, Washington, D.C.

**Cereal Institute, Inc.: Breakfast Source Book. Chicago: Cereal Institute, Inc., 1959
Watt, B. K., and Merrill, A. L.: Composition of Foods—Raw, Processed, Prepared. U.S.D.A. Agriculture Handbook No. 8, 1950.

[1]*The allowance levels are intended to cover individual variations among most normal persons as they live in the United States under usual environmental stresses. Calorie allowances apply to individuals usually engaged in moderate physical activity. For office workers or others in sedentary occupations they are excessive. Adjustments must be made for variations in body size, age, physical activity, and environmental temperature.*

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Galeota, W. R., and Morsaville., B. A.: Student Medicine (in press)

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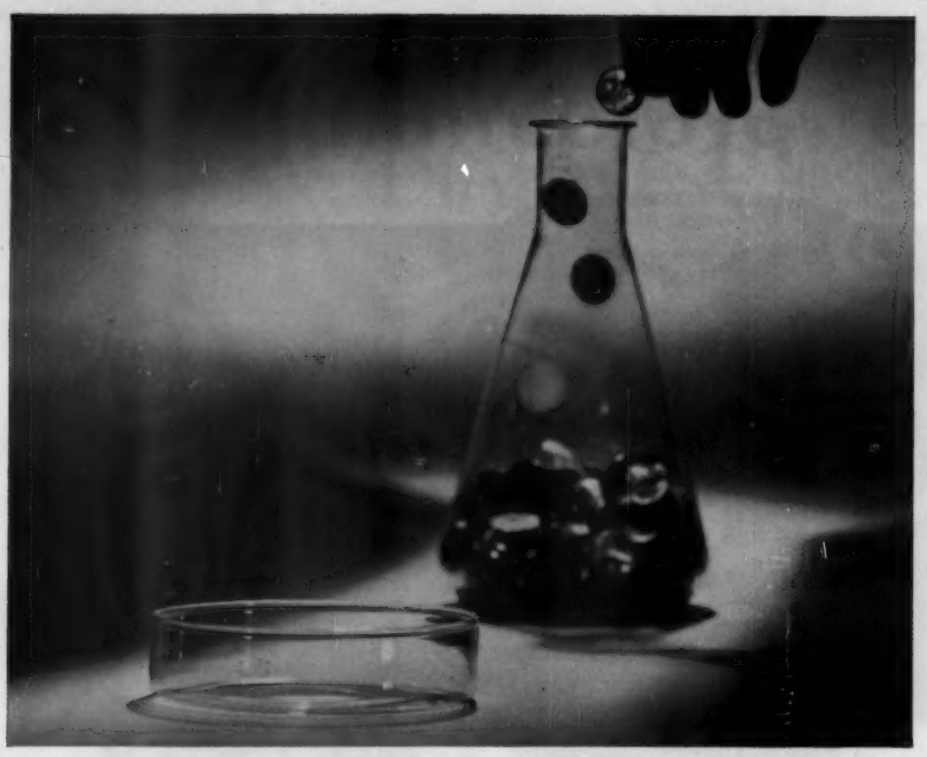

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1. Greenhouse, B.: Ann. New York Acad. Sc. 74:643, 1959. 2. Dobson, H., et al.: Ibid., p. 940. 3. Forsham, P. H.; Magid, G. J., and Dorosin, D. E.: Ibid., p. 672. 4. Besser, S. B.: Ibid., p. 701; New England J. Med. 259:573, 1958. 5. Bloch, J., and Lenhardt, A.: Ann. New York Acad. Sc. 74:954, 1959. 6. O'Driscoll, B. J.: Lancet 2:749, 1958. 7. Hadley, W. B.; Khachadurian, A., and Marble, A.: Ann. New York Acad. Sc. 74:621, 1959. 8. Duncan, G. G.; Schless, G. L., and Demeshkieh, M. M. A.: Ibid., p. 717. 9. Handelsman, M. B.; Levitt, L., and Calabretta, M. F.: Ibid., p. 632. 10. Hills, A. G., and Abelove, W. A.: Ibid., p. 845. 11. Drey, N. W., et al.: Ibid., p. 962.

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1. Proceedings National Conference-Hospital-Acquired Staphylococcal Disease, September, 1958, pages 3-10.

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Journal of Public Health

North Carolina has had contraceptive service since 1937 as part of the state maternal and child health program. The experience of two decades and the current status of the service is reviewed in this article.

TWENTY-ONE YEARS' EXPERIENCE WITH A PUBLIC HEALTH CONTRACEPTIVE SERVICE

J. W. R. Norton, M.D., F.A.P.H.A.; James F. Donnelly, M.D.; and Anne Lamb, R.N.

In March, 1937, a contraceptive service was introduced into the regular activities of the North Carolina public health program.[1] Now, 21 years later, this service is firmly established as a basic part of the total health program in the state. A recent review of the maternal and child health program, particularly of the maternity services, provided an opportunity to review the status of the contraceptive service.

Currently, the main purposes for contraceptive service are spacing or prevention of pregnancy for medical and/or socioeconomic considerations and control of excessive population growth. One or the other of these is emphasized in various parts of the world. In one sense these objectives are all similar in that they are directed toward the production of healthier offspring with a greater chance for survival and a greater opportunity to attain their full potential of development. Medical, social, and economic indications usually overlap and blend together so that they become indistinguishable.

Medical indications were the main factors in establishing the service in North Carolina.[1-5] Some of the early descriptions of the development of the program create the impression that it was an isolated program both in its inception and in its growth.[2,3] Historically the program was another and logical step in the over-all attempt to improve maternal and child health, including both mortality and morbidity rates.[1,4,5] Some of the important historical steps are worth recounting and the reader interested in more detailed information is referred to the extensive reviews by Wall[6] and Beard.[3]

The definition of the problem as it existed in North Carolina was made possible by an adequate vital statistics law

passed in 1913. By 1920 sufficient data had been obtained to indicate that diseases associated with pregnancy were second only to tuberculosis as a cause of mortality in the state. Additional surveys at that time indicated that one-third of all deliveries were conducted by midwives and that very few women had any medical care whatsoever prior to the onset of labor and almost none following delivery.[7]

Infant hygiene units were organized on a county and district basis to instruct expectant mothers regarding prenatal and well baby care. The units organized training for the midwives. By 1925 some of the counties in the state had adopted laws requiring training, equipping, examination, and registration of midwives working in those counties.

The first large private maternity clinics offering modern prenatal care were established in 1929 in Raleigh and 1932 in Charlotte. These clinics were intended for indigent patients and were supported on a private basis. The results of these clinics were so successful in saving the health and lives of mothers that the State Board of Health, other agencies, and private physicians stepped up the campaign to inform the public about the importance of prenatal care.

The Social Security Law enacted by the federal government in 1936 permitted the State Board of Health and its component county units to offer greatly expanded maternity services throughout the state. The following year the contraceptive program was included in seven of the county health departments.

Certain policies regarding the contraceptive service offered by the county health departments were followed from the beginning. Fundamental in the success of the program was the consistent refusal of those responsible to indulge in excessive public propaganda. Through a private donor, the services of a public health nurse trained in this field were made available to all the county health departments. The service was explained in detail to, and received approval by, the participating local health departments and the county medical societies in conformity with the approach taken in all public health programs in the state. The State Board of Health served originally only as a consultative agency with a private donor providing financial assistance. The county boards of health are autonomous and free to accept this or any other program as they see fit. There were two nonprofessional organizations in the state, the Maternal Health League and the Citizen's Committee, which provided moral and financial support. Dr. C. J. Gamble contributed time, money, and wisdom in the beginning. By 1942 private financial aid was discontinued.[8]

The characteristics of the clinics varied widely and still do. The service was provided in some counties by referral to either a hospital or outpatient department staff or to private physicians who provided contraceptive advice. Other counties participating in the program provided the service within the walls of the health department and under the supervision of the health director or a private physician. The local health department physicians and nurses have participated as workers in a balanced maternal-child health program. In the first year there were a total of 236 patients who received the service through the public health program. By the end of 1938, 38 counties were participating and the number of patients had risen almost to one thousand.

Even in the early years the majority of the patients came after parturition and were referred predominantly by public health nurses.[9] A survey of the first four years of the programs showed 67 per cent of the patients were referred by public health nurses, 15 per cent by private physicians, and 12 per cent by welfare social workers.[10] All but a few

of the patients were indigent, or medically indigent. The indications for contraceptive service were medical conditions, multiparity, and poor socioeconomic situations and usually a combination of all these. The contraceptive technic most commonly used in the beginning of the program consisted of foam powder and sponge with a few of the urban centers using diaphragm and jelly technic. The main cause of failure was considered neglect or carelessness by the patient. Most of the clinics now use either the jelly alone or with a diaphragm.

It is impossible to determine the effectiveness of the contraceptive program because of inadequate vital statistics and other information which have been recorded. At the beginning of the program, relationship between high birth rates and high mortality was stressed as occurring in the lower socioeconomic groups served. Birth rates for North Carolina have always been somewhat higher than for the United States as a whole,[11] even when the birth rates by race are considered (Figure 1, Table 1). Figure 1 illustrates that the birth rates in North Carolina show the same pattern as those in the United States. The rising

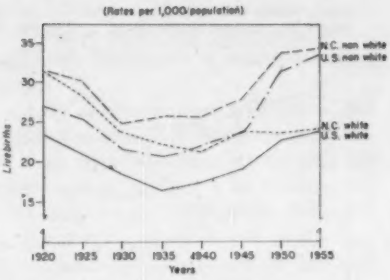

Figure 1—Live Birth Rates for the United States and North Carolina by Race at Five-Year Intervals

postwar birth rates are somewhat more rapid in the United States than in North Carolina.

Over the same period of time the maternal, late infant,* and perinatal† mortality rates have shown a consistent decline which began even prior to the completion of the total maternity serv-

* Late infant deaths include all deaths from 28 days to one year of life. This category was used to separate to some extent the infant deaths due to acquired extrauterine factors as opposed to perinatal mortality which is predominantly deaths due to intrauterine factors.

† Perinatal mortality includes all fetal deaths from 20 weeks on and all neonatal deaths up to 28 days.

Table 1—Birth Rates for the United States and North Carolina by Race, 1920-1955 (Five-Year Intervals)

	United States		North Carolina	
	White	Nonwhite	White	Nonwhite
1920	23.5	27.0	31.5	31.3
1925	21.0	25.4	28.4	30.2
1930	18.6	21.6	23.9	24.9
1935	16.5	20.6	22.3	25.9
1940	17.5	21.7	21.3	25.8
1945	19.1	23.2	23.7	27.9
1950	22.7	31.1	23.5	33.6
1955	23.6	33.1	24.0	34.4

NOTE: Birth rates are the number of live births per 1,000 population.

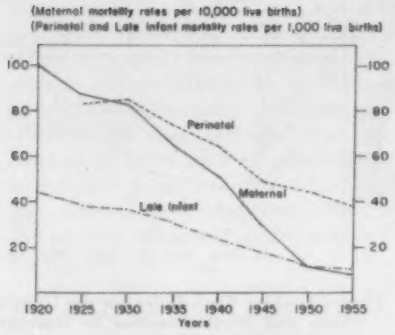

Figure 2—Maternal, Perinatal, and Late Infant Mortality Rates, North Carolina 1920-1955 at Five-Year Intervals

ices which include contraception (Figure 2 and Table 2).[11] Numerous factors obviously are responsible for such remarkable reductions in mortality. Although it cannot be proved exactly what weight should be attributed to the contraceptive service as a factor in the reduction of mortality in these three groups, we feel certain it has been important.

Health and medical care for the obstetric patient who is indigent or medically indigent is provided in North Carolina by a few hospital outpatient departments, by county health departments, and by private physicians. A considerable segment of the obstetric population in the state receives its health care through the county public health clinics. In recent years 12-14 per cent of the total number of women delivered in the state have received prenatal care through such clinics. Table 3 shows the number of patients receiving contraceptive service through health departments through 1957.[12] The patients receiving this service represent a considerable percentage of the number of patients who receive prenatal care through the county health clinics. This percentage would be increased greatly by the elimination of the women who are pregnant for the first time. The service is available in 74 of the 100 counties. The counties which do not offer the contraceptive service are almost totally in the western part of the state where obstetric care and contraceptive advice are provided almost entirely by private physicians and where there are fewer midwives.

As the maternal, perinatal, and infant mortality rates have dropped, it has become more apparent that most of the deaths are occurring in the lower socioeconomic groups. Approximately one-third of the deliveries in North Carolina are in the fourth of the population which is nonwhite. A study of the maternal deaths in the state revealed that there were four nonwhite maternal deaths to each white maternal death.[11] For some categories, such as toxemia, the incidence rose to six nonwhite to one white.[13] A study of perinatal deaths currently conducted by the State Board of Health also indicates that the lower socioeconomic groups have much higher perinatal mortality rates than do the groups in the upper socioeconomic classifications.[12,14]

Four years ago the State Board of Health surveyed the clinic facilities available through the county health departments in an effort to strengthen the obstetric care provided by the counties.

Table 2—Maternal, Perinatal, and Late Infant Mortality Rates, North Carolina 1920-1957 (Five-Year Intervals)

	Maternal	Perinatal	Late Infant
1920	100.0	N.A.	44.1
1925	86.6	83.1	38.3
1930	83.2	85.4	37.8
1935	64.9	75.6	31.5
1940	51.2	65.7	24.1
1945	28.4	49.2	18.4
1950	11.8	44.4	13.1
1955	8.7	39.2	10.9

There were inexplicable variations in size, quality, location, and organization of the maternity clinics. In 1954 there were over 200 clinics in 88 counties with 15,036 patients registered for prenatal care. This represented 13 per cent of the total number of deliveries in the state. These patients made an average of two and a half prenatal visits per pregnancy. Only 20 per cent of the patients returned for a postpartum medical examination, which restricted the number available for contraceptive advice. The county clinics were largely dispersed into numerous small and inadequate facilities throughout the county. Prenatal service was offered on a once-a-month basis in many of the clinics. The actual medical service was inadequate. Most of the clinics were poorly housed and only limited physical, pelvic, and basic laboratory examinations were done.

Many of the patients who attend the county public health clinics are delivered at home by a midwife. At the time the contraceptive service was initiated in 1937 only 15 per cent of the deliveries in the state were conducted in the hospital. Midwives performed 20 per cent of the deliveries and physicians delivered the remainder at home. Since that time there has been a progressive increase in the number of patients delivered in the hospital associated with a decrease in the number of home deliveries by a physician or midwife.

Centralization of the clinics has been

Table 3—Total Live Births, New Maternity Patients Registered in Public Health Clinics, and Number of Patients Receiving Contraception Service Through the Health Department

Year	Total Live Births	Public Health Clinic Prenatal Patients	Public Health Clinic Planned Parenthood Patients
1937	79,146	6,855	236
1938	79,992	8,755	864
1939	79,133	11,797	1,599
1940	80,455	15,280	3,233
1941	84,595	16,038	N.A.
1942	89,854	14,791	N.A.
1943	94,568	12,355	1,779
1944	90,629	10,733	2,049
1945	87,401	8,336	2,454
1946	100,679	8,169	2,667
1947	112,877	10,382	2,849
1948	109,430	9,946	4,441
1949	107,970	10,119	4,384
1950	106,486	13,080	4,291
1951	110,910	16,388	4,102
1952	111,272	13,841	4,291
1953	111,856	15,558	3,585
1954	114,846	15,193	N.A.
1955	115,197	15,926	2,495
1956	115,792	16,256	2,776
1957	113,143	14,711	2,938

accomplished successfully in spite of protests that transportation problems would render them ineffective. In 1957, 87 per cent of deliveries in North Carolina were in the hospital with 5 per cent of the deliveries occurring in the home attended by physicians and 7 per cent attended by midwives. Thirteen per cent were registered in the public health clinics for prenatal care, averaged three prenatal visits, and over 40 per cent returned for at least one postpartum medical visit. Ninety-nine per cent of white deliveries occurred in the hospital in 1957.[11] Although the State Board of Health is interested in the entire obstetric service in the state, the primary concern is for that group of patients who receive their prenatal and postnatal care through the public health clinics and are delivered by midwives. The current problem then deals primarily with approximately 12-14 per cent of the obstetric population of the state who receive their prenatal care through the public health clinics. Many of them are subsequently delivered by midwives or physicians at home and these are the primary source of maternal and infant mortality and morbidity. An effective contraceptive service in this group should reduce both mortality and morbidity rates where they are highest.

Discussion

For the past 21 years a contraceptive service has been available through most of the county health departments in North Carolina. Originally the program was set up as an additional service to the other maternity programs provided by the counties. In this respect it was similar to some of the planned parenthood clinics whose sole function is to provide contraceptive service and whose patients are definitely seeking some assistance for the prevention of pregnancy. Over the years the program has become more closely related to the over-all maternity program with many counties providing this service as part of the regular postpartum medical examination and counseling. Many of them are also clients of the welfare departments. The frequency of contraceptive service provided by the private physician is not known. Nearly all the young doctors in the state at the present time have been trained in contraceptive technics and all three of the medical schools provide training not only in such technics but in other aspects of planned parenthood, such as infertility, premarital counseling, and expectant mothers' counseling.

No attempt has been made toward exact determination of clinical effectiveness of the various methods used in the clinics. The acceptable contraceptive technics presently are highly reliable.[14-16] Any method is more reliable with couples in higher income groups and also in urban couples, and where a strong motivation to space or prevent pregnancy appears necessary.[16] Patients who attend public health clinics seem to be highly resistant to considerations which usually motivate a couple to family planning, such as desire for a higher standard of living, the higher status of the woman, and medical conditions.[2] The increased social and business activities of women appear as less important motivations.[17] As a matter of fact a large family continues to be an economic asset in agricultural North Carolina because the landowner prefers his tenant farm families large in order to assist in the tobacco and cotton crops. The lack of social outlets in this group possibly tends to increase the frequency of sexual relationship; lack of privacy and plumbing facilities discourages contraceptive technics and thus the number of pregnancies is increased.[18]

In looking at our prenatal clinics it was evident that we were seeing patients in the advanced months of pregnancy and who made only a few prenatal or postnatal visits. It was obvious that

during this relatively short contact with these patients, it would often be difficult to develop much interest in the use of contraception. At present we are attempting to correct the insufficient prenatal and postnatal care which the patients receive. It was disturbing to note that many patients were attending the clinic either to obtain a blood test, which is mandatory by state law, or to get a written permit for a midwife delivery. Almost all the counties now provide an adequate prenatal and postnatal care program for these formerly neglected patients. In addition, some counties have made arrangements with the local hospitals for delivery of the patient in the hospital.

The centralization of clinics enables the county health personnel to serve more efficiently and also to provide weekly visits. The State Board of Health prepared a set of detailed recommendations as basic requirements for a desirable obstetric service. If the patient is a candidate for contraception the subject is introduced in one of the early prenatal visits, either the second or third. If the patient is not seen until late in pregnancy the matter is brought to the patient's attention then. The subject is discussed with the patient later in pregnancy as term approaches. In addition, other instruction on the importance of adequate medical care is carried on either through group discussion or by individual patient interviews. It is our hope that the health education acquired during the prenatal period will influence more patients to return for postpartum medical supervision and also to enroll her newborn for pediatric care. When the patient returns to the postpartum clinic the subject of contraception is again brought up. The patient has had time to think it over and is prepared to make a decision regarding the use of contraception. It is common practice among physicians giving adequate obstetric care in our state to provide advice on contraception for their patients at the same time the postpartum examination is performed. The contraceptive service is now just as much a part of the maternity care of the patients attending the public health clinics as are the physical examination, laboratory tests, and contraceptive advice for the well-to-do in the office of the private physician. The value of the maternity services can be further enhanced by more frequent medical prenatal contacts. The contraceptive service has definitely been a factor in the improvement of maternal and child health in the state.

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Postgraduate Course in Occupational Skin Problems

The Institute of Industrial Health of the University of Cincinnati announces its fourth biennial course of instruction in Occupational Skin Problems, October 26-30, 1959. It will be presented by the Department of Preventive Medicine and Industrial Health, University of Cincinnati, in collaboration with the Department of Dermatology and with the Occupational Health Program of the Public Health Service. The objective is to give physicians a greater understanding of cutaneous problems of occupational origin.

The daily sessions will consist of morning lectures and clinical demonstrations, afternoon field instruction in industrial plants, and evening panel discussions.

Interested physicians are advised to apply early, since attendance will be limited. Application blank from Secretary, Institute of Industrial Health, The Kettering Laboratory, Eden and Bethesda Avenues, Cincinnati 19, Ohio.

This is a description of changes that have been made in the fourth edition of Recommended Dietary Allowances. The author presents the nature of the changes and discusses their implications.

THE 1958 REVISION OF RECOMMENDED DIETARY ALLOWANCES

Robert E. Shank, M.D., F.A.P.H.A.

IT IS probably not news that "Recommended Dietary Allowances" was revised and appeared in a new edition in 1958.[1] The most recent revision represents the fourth since the original presentation of this as a national food standard by the National Research Council in 1943.[2] Initially the allowances were developed to meet the imminent needs of war so that nutritional knowledge could be utilized to best advantage in planning the health and productivity of our nation during a period of severe national stress and effort. It became immediately apparent that such a food standard could be adapted to a variety of purposes, some undoubtedly not foreseen by the Food and Nutrition Board of the National Research Council in its earliest deliberations and decisions. There is, therefore, a significant purpose to be served in reviewing the common uses to which Recommended Dietary Allowances has been put.* The allowances have provided a guide for many nutrition enterprises in this country and they are accepted broadly as a basis of planning for feeding large groups of individuals in institutions and in the Armed Forces. In addition, they continue to provide a stimulus for research to determine requirements of certain nutrients, since the periodic review and revision of the allowances point out the limitations of knowledge concerning human needs for some of the nutrients.

Prior to establishment of Recommended Dietary Allowances, usual standards were meant to represent food requirements meeting minimal needs and avoiding nutritional deficiency disease. In this standard, another and hopefully higher objective was sought. The allowances have been designed to maintain good nutrition in healthy persons in the United States under current conditions and to cover nearly all variations of requirements for nutrients in the population at large. Since they are set at levels affording a margin of sufficiency above minimal requirements, they are planned to provide a buffer against the added needs of various stresses and possibly allowing for other potential improvements of growth and function. It should be recalled that the allowances are not considered adequate to meet the additional requirements deriving from disease or for nutrient repletion in severely depleted persons. On the other hand, they are more generous than is often practicable when large groups must be fed under conditions of limited food supply or economic stringency.

* Two papers by Friedemann and Kraybill and Heineman and Bennett, to be published in a forthcoming issue of this Journal, will indicate and evaluate some of the uses for which the standard has been widely adapted.

These considerations and general approaches have been utilized in the most recent as well as in all earlier revisions of Recommended Dietary Allowances. A considerable number of us have probably had an opportunity to examine the latest revision. I would, therefore, like to direct attention to the most significant changes which have been introduced in this new edition.

The first of these relates to the "reference" individuals. Prior to 1953 the table of allowances which accompanies the statement afforded allowances for a reference man or woman of stated height and weight, but of varying degrees of activity. With the 1953 revision the reference individuals were changed to correspond with conditions specified by the FAO Committee in its stipulation of calorie requirements for persons of different ages and undergoing moderate physical activity. This adaptation did not allow for conditions usually applying in the United States. For instance, the weight of the reference man was taken to be 65 kilograms, whereas it can be demonstrated that the average adult man aged 25 in this country is approximately 70 kilograms. Moreover, the FAO conditions specified living conditions with a mean external temperature of 10°C, whereas it seems reasonable to assume that the average temperature under which most Americans live is nearly 20°C. Homes and places of work are almost uniformly heated during coldest months and many persons now live and work in air-conditioned atmospheres so that the effects of high temperature are at least partially ameliorated. Accordingly, the reference man is now specified to be 25 years of age, 69 inches tall, weighing 70 kilograms (154 lbs), living at a mean external temperature of 20°C and engaged in moderate physical activity. Similar changes have been made in conditions for the reference woman.

It should be emphasized that the allowances are stipulated in the tables for persons comparable in age, body size, and living conditions. When allowances are sought for persons or groups who vary in one way or another from reference conditions, adaptations in the allowances must be made. The means of adapting allowances for these variations are explained in the published material. The new revision, for instance, contains new tables which provide calorie allowances for persons of varied size and age. The values included take advantage of new procedures for adapting calorie allowances for increasing age during the years of adulthood. Available data readily substantiate the progressive decrease in calorie requirements with advancing age. Best approximations indicate a reduction of about 3 per cent per decade between the ages of 30 to 50 and about 7.5 per cent per decade from age 50 to 70. Accordingly, calorie allowances as given for age 45 are 6 per cent less, and at age 65 are 21 per cent less than at age 25. The changes introduced here are in accord with latest FAO recommendations for calorie allowances.[3]

Another change in calorie allowances relates to modified values for adaptations to climate. Original estimates indicated a decrease of 5 per cent in calorie intake for each increase of 10 degree (C) in external temperature above standard temperature and a corresponding increase of 5 per cent for each 10 degree decrease in mean environmental temperature. The recent revision retains the 5 per cent decrease for an increase in environmental temperature but allows for an increase of only 3 per cent per 10 degree (C) decrease in external temperature, this having been decided upon in light of evidence that persons usually protect themselves against cold by use of warm clothing and living and working in heated buildings.

Undoubtedly, the factor of greatest importance in causing variations of calo-

rie needs under otherwise standard conditions is the expenditure of physical energy. The activities described for the reference man and woman are adjudged to be approximately average for the American population. Yet individuals will vary widely in this respect. Persons engaged in heavy labor will have enhanced requirements, but the allowances probably need seldom be increased more than 25 per cent above the standard allowance. A more important problem for our population exists for those who expend less physical energy and will thereby have reduced requirements because of a relatively sedentary existence. For all persons, the allowance is best adjudged for adequacy or pertinence by observation of weight change and health performance. Fortunately, there is renewed interest in assessment of energy expenditures in common activities and/or employment. Perhaps a later revision of Recommended Dietary Allowances will therefore be able to offer somewhat more satisfactory procedures for modification of calorie allowances for variations in physical activities.

In the preparation of the 1958 revision of Recommended Dietary Allowances, more time and effort were devoted by the board to consideration of protein allowances than to any other allowance. There was a desire manifest to afford a new approach to establishing protein allowances on new and perhaps more precise bases, in the light of world-wide research interest in protein requirements. However, after prolonged deliberation, the approach to protein allowances utilized in earlier editions has been retained and the long accepted figure of one gram protein per kilogram of desirable weight has been retained for adults. It is agreed that such an allowance is not excessive and includes a reasonable margin of safety to meet added demands of individual variations in protein requirement and the differences in nutritive quality of proteins derived from different food sources. As with other allowances, the protein allowances assume a diet adequate also in calories and other essential nutrients. The allowances provide also for additional intake of 20 grams protein per day above the basal allowances during the last half of pregnancy and of 40 grams per day for the lactating woman. Because agreement could not be established concerning protein needs of infants during the first months of life, no allowance is stated for this important period. It is stated, perhaps needlessly, that protein requirements of the young infant are best met by breast feeding. The difficulties confronting the board in this regard have had another result, however, in that heightened and renewed research interest and endeavor in the assessment of infant needs for protein has been occasioned.

Another area of extensive activity on the part of the board in preparation of this revision concerned the reconsideration of calcium allowances. It was recognized that the literature contains evidence of wide variation in calcium requirements as determined by balance studies and that the other criteria for judgment of dietary needs for calcium are limited. However, the allowance of 800 milligrams of calcium per day for adults (excluding pregnancy and lactation) has been reaffirmed.

A minor change in iron allowances is to be found in the new revision. This pertains to the allowance of 10 mg iron per day for the adult male as compared to 12 mg for the female. This represents a reduction in the male allowance of 2 mg per day. It is substantiated by data in the literature and takes recognition of the lower rate of iron loss or excretion in the male as compared to the female during the years of menstruation.

The approach to the establishment of allowances for the various vitamins is like that of earlier editions and actual

values are little changed, the differences deriving primarily from the changes introduced in the size of the reference man and woman. There is one major exception. This pertains to the niacin allowances, which have been reevaluated in terms of the quantity of the preformed vitamin available in mixed diets plus that derived from the precursor, the amino acid tryptophan. Previously these allowances included only the dietary niacin. The modification to include tryptophan has effected an apparent but not real increase in the allowances. Values are given as milligrams of niacin equivalent. The equivalent value for tryptophan is based on information in the literature which demonstrates that one milligram of niacin activity derives from each 60 milligrams of tryptophan. Most diets in the United States afford from 500 to 1,000 mg of tryptophan daily which contribute from 9 to 17 milligrams of niacin activity. Tables of food values are now commonly available to afford estimate of tryptophan content as well as content of niacin. It is hoped, therefore, that this change will be readily adapted and will be found useful. Certainly, it is in line and consistent with new knowledge which has become available concerning niacin requirements.

The text of the new edition has been entirely rewritten and presents the considerations of the board in provision of these allowances. It is hoped that it will be utilized as freely and totally as is the table that accompanies it. Only by such means can the standard be understood and used in its best and proper context.

Finally, I wish to point out that as with all biologic functions, nutrient requirements vary from individual to individual within a wide range. The effort has been made to afford allowances which will cover nearly the entire distribution curve of requirements, thus meeting the needs of those with the greatest requirements and providing a substantial margin of sufficiency for the majority of individuals. The allowances as proposed are conceived to be wholly adequate for maintaining good nutrition throughout life.

The allowances are planned for healthy, moderately active persons. The presence of acute or chronic illness may modify nutrient requirements markedly. In febrile illnesses and hyperthyroidism, needs for certain nutrients may be enhanced because of increased metabolism, while in other disorders involving the gastrointestinal tract absorption of nutrients provided in the diet may be impaired. These problems and the planing of diets for such persons must remain the responsibility of the physician.

Recommended Dietary Allowances have been provided to serve as a guide for planning adequate diets for normal healthy populations or individuals. If they are to be used for estimating the needs of population groups, the allowances must be weighted in terms of the distribution of various age, sex, and activity categories in the population. Also, if utilized for purposes of dietary surveys to determine the adequacy of food intake, it must be realized that diets affording less than recommended dietary allowances do not of necessity imply nutritional deficiency. Furthermore, in times of food lacks or economic stringency, it may not be possible for all segments of the population to achieve full compliance with all of the allowances. Under such circumstances, if long continued, it is possible that certain individuals with high requirements may show signs of deterioration in health.

The values given for recommended allowances represent quantities actually consumed and do not allow for losses due to storage, cooking, or serving. Provision must be made for these losses in diet planning. The allowances, on the other hand, do provide for incomplete absorption or availability of certain nutrients such as iron and carotene.

After this fourth revision of Recommended Dietary Allowances it may be unnecessary to remind ourselves that all allowances are considered tentative and in no sense absolute or precise. Certainly we can conclude that they have proved themselves useful for the purposes originally intended and perhaps for other and new uses as well. However, other revisions are contemplated and will be made available as experience and the results of new research efforts make it possible to establish the allowances more precisely. Actually, it is rewarding to see how well the originally proposed standard has stood the test of 15 years of use and acceptance.

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National Health Council's 66th Member

The American Psychiatric Association has reestablished its membership in the National Health Council following the unanimous vote of the council's Executive Committee. The Council of the Psychiatric Association on May 1, 1959, voted reaffiliation.

The Army Master Menu, basic dietary standards for soldiers, and their relation to the recommended dietary allowances of the National Research Council are presented in this paper.

THE USES OF RECOMMENDED DIETARY ALLOWANCES IN MILITARY NUTRITION

Theodore E. Friedemann, Ph.D.; Herman F. Kraybill, Ph.D.; and C. Frank Consolazio

THE SOLDIER is a member of a selected group of the population whose nutrition requires careful planning. Many of his activities may be as sedentary as similar occupations in civilian life. His work may be clerical, driving light vehicles, performing hospital ward duty, and so forth. On the other hand, his activities may be very heavy, as in basic training, maneuvers, and combat. In the course of his duties the soldier may be exposed to extremes of heat or cold. If a recruit, he may still be growing, since the majority of inductees are under 25 years of age. The soldier's diet, therefore, requires careful planning for the maintenance of health and well-being under a wide range of activity and environment.

The purpose of this article will be: (1) to discuss the Army's basic dietary standards and their relation to the Army Master Menu, (2) to review briefly the history of military nutrition in our Army, and (3) to discuss the soldier's nutrient intake and requirements and their relation to the recommended dietary allowances of the National Research Council.

The Army's Basic Dietary Standards and the Master Menu

The Surgeon General, Department of the Army, is responsible for prescribing the basic dietary standards. These are based not only upon the recommended dietary allowances of the Food and Nutrition Board, National Research Council, but also upon nutrition surveys which have been made by the Medical Service since 1892 among troops in various conditions of operation.[1-4]

The Quartermaster General, Department of the Army, is responsible for the choice of foods, the formulation of menus, and the administration of the feeding program. Since July, 1941, the procurement and serving of food has been prescribed in a Master Menu which is published six months in advance and is used throughout the Army.

According to the Army basic standard, the minimum nutrient intake of the physically active soldier in areas of temperate climate should be 3,600 calories, 100 gm of protein, 700 mg of calcium, 5,000 international units of vitamin A, 1.7 mg of thiamine, 2.0 mg of riboflavin, 16 mg of niacin, and 75 mg of vitamin C. Additional allowance is made for strenuous duties in cold environment. Thus, when troops are engaged in outdoor activities where the prevailing temperature is subzero over periods of one week or more, an adjustment is made to provide a minimum of 4,400 calories.

The Master Menu is planned to yield these nutrients, after making allowance for waste. An allowance of about 15 per cent above the basic standard is thus made for edible waste. During

Table 1—Nutrients Provided by Army Master Menu Compared to Army Basic Standard*

Nutrient	Prescribed Army Basic Standard	Furnished by Master Menu, 1957
Calories	3,600	4,195
Protein, gm	100	131
Fat, gm		199
Carbohydrate, gm		470

* Vitamins and minerals were furnished above the levels of the recommended dietary allowances of the National Research Council.

several years the energy value from the total edible nutrients furnished in the ration has varied between 4,100 to 4,300 calories. During 1957 (Table 1) the average total nutrients provided by the Master Menu were 4,195 calories, 131 gm protein, 199 gm fat, and 470 gm carbohydrate. The vitamins and minerals are well above the levels of the recomended allowances of the National Research Council even when one considers all the losses and waste during food preparation.

Of interest is the high fat content of the Army diet. Assuming that one gm of fat yields nine calories of metabolizable energy, then the 199 gm of fat of the 1957 Menu furnished 43 per cent of the total daily calories of the ration. Although this is perhaps high, it is also within the range of fat-calorie intake of the high-income groups among the civilian population in this country.

On the whole, the diet is well planned, acceptable, and generously provided.

Brief History of Military Nutrition

Strange as it may seem, a good diet—modern and nutritionally adequate in most respects—was prescribed by the Continental Congress when George Washington[5] took command of the Continental Army in 1775 (Table 2). It was an unusual diet when compared with that of armies in other countries. From antiquity the rations of soldiers had consisted of meat (mostly salted or dried) and bread or flour. The diet was monotonous and nutritionally inadequate. The soldier presumably had to supple-

Table 2—Ration of the Continental Army (November 4, 1775)

Primary Items	Oz	Equivalent Items	Oz
1. Beef, fresh	16	Beef, corned, or pork, or fish, salt	16 12 16
2. Flour	16	Bread, hard	16
3. Rice	1	Indian meal	2
4. Beans or peas	6.43	Potatoes, turnips, onions†	
5. Milk	16	Beef or pork	8 4
6. Butter*	0.86	Lard*	1.3
7. Spruce beer	32	Cider (rum 1 gill) or molasses	32 1.67
8. Miscellaneous: Candles 0.137 oz, soft soap 0.549 oz, and hard soap 0.183 oz.			

* Added December, 1775.
† Cost approximately equal to legumes.

ment the diet himself. Thus, the garrison ration of the Prussian Army in 1791 had been specified to consist of the following items:

1. 250 gm dried fish or 125 gm bacon
2. 1,000 gm bread
3. 200 gm peas, or 200 gm barley, or 640 gm flour

Other armies had almost identical rations.[6,7]

The Continental Army ration of 1775 was planned to contain fresh beef, flour, rice, peas or beans, milk, butter, and spruce beer. Potatoes, turnips, and onions were to be furnished instead of peas or beans at a cost approximately equal to that of the legumes.

The provision for milk, butter, spruce beer, and vegetables made this an unusual army diet. It is evident that the ration yielded considerable quantities of vitamins A and C and proteins of high biological value. Had this ration been continued, then the incidence of scurvy and other deficiencies, which were so prevalent in our troops during the following century to 1875, could have been averted.

However, this ration which was rather ideal for its time did not long survive. Although planned with the highest intentions, it failed in practice through inability to provide the specified fresh foods.

By 1790 the first Regular Army ration was formulated (Table 3). The primary items were beef or pork and flour or bread. It was like the contemporary European army rations.[6,7] This ration was supplemented or increased from time to time and was the standard diet for the next 100 years.

During this century changes gradually occurred in the level of macronutrients of the prescribed Army rations. They have interest for us because they indicate that the Army diet was determined by many factors in addition to the scientific opinions of the time.

Table 3—First Regular Army Ration (1790)

Primary Items	Oz	Equivalent Items	Oz
1. Beef	16	1. Pork	12
2. Flour	16	2. Bread	16
3. Rum	4	3. Brandy, whisky	4

For Every 100 Rations

	Oz		Oz
Salt	32	Soap	32
Vinegar	64	Candles	16

The primary items of the Continental Army diet yielded about 3,600 calories (Figure 1). By 1790 the energy value had fallen to 2,600 calories. After the war the ration was increased until in 1927 and 1933 the caloric values attained the respective levels of 5,500 and 5,000 calories. Thereafter, the rations were revised to the present content of 4,100-4,300 calories.

The carbohydrate content of the edible portion of the prescribed rations from 1775 to 1957 rose and fell with the caloric content (Figure 2). From 450 gm in 1775 the content fell to 336 gm in the ration of 1790. Thereafter, it rose quite regularly in the later revisions to 446 gm in the Civil War ration, and attained the respective values of 675 and 530 gm in the rations of 1927 and 1933. During the past several years the Master Menu has contained about 460 gm of edible carbohydrate.

The edible protein content of the prescribed rations has remained fairly constant through the years (Figure 3). It was 179 gm in 1775; it fell to 118 gm in 1790; rose to 141 gm in 1798; and remained fairly constant at this level until 1875. It then rose to the maximum level of 178 gm in the rations of 1927 and 1933. This was the same level as had been prescribed in the Continen-

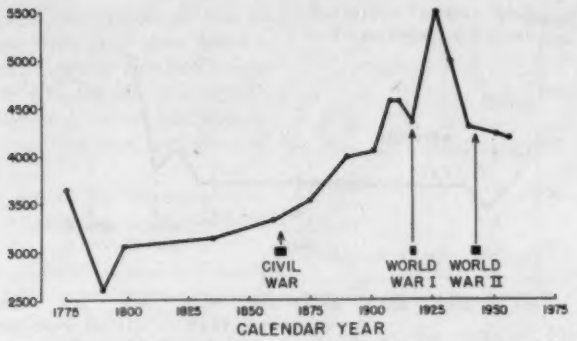

Figure 1—Calculated Calories of Edible Portion of Prescribed Army Rations, 1775-1957

tal Army ration 150 years earlier. After this period, the protein content decreased to our present value of approximately 131 gm.

The fat content showed parallelism to the protein content during more than a century (Figure 3). The 1775 ration contained 125 gm, which fell to 86 gm in 1790; it then rose to 107 gm, at which level it was maintained until 1901. Thereafter, it rose sharply to 228 and 236 gm, respectively, in 1927 and 1933. The content then decreased slightly to the current level of about 200 gm of edible fat provided by the Master Menu.

During a period of almost 150 years the percentage of calories derived from fat varied from 24 to 32 per cent (Figure 4). During this time the maximum of 32 per cent was attained in 1798, after which it fell to the lowest point in 1890. The gradual fall was due to the increasing use of refined sugars, syrups, and fruits, vegetables, and potatoes. After World War I, the percentage of calories derived from fat rose rapidly

Figure 2—Carbohydrate in Edible Portion of Prescribed Army Rations, 1775-1957

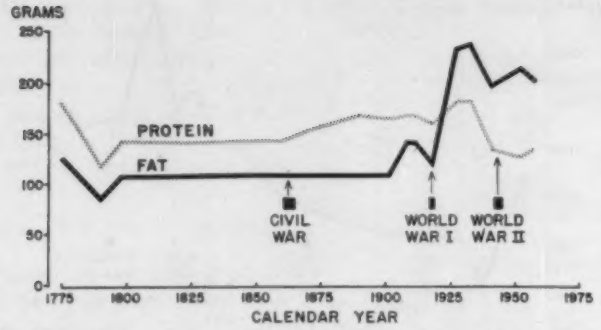

Figure 3—Protein and Fat in Edible Portion of Prescribed Army Rations, 1775-1957

to 38 per cent and 43 per cent, respectively, in 1927 and 1933. A maximum of 45 per cent was attained in 1952. As already stated, about 43 per cent of the total calories of the present Master Menu are derived from fat.

Many factors contributed to the rapid changes which the rations have undergone since 1890 when the first thoroughgoing revisions since colonial times were made. We shall note some of these factors very briefly.

1. The recognition and acceptance of scientific experience.[1,8,9] In 1875, T. A. McParlin,[8] a surgeon stationed at Ft. Leavenworth, made the first appraisal of the ration. He stated that "potatoes, milk and cheese (or butter) could be advantageously added to our ration." He noted that "Dietaries should differ in accordance with the requirements of climates and of seasons in the same climate. They should vary in some respect every day. . . . Due regard should be had to economic considerations, but cost should not prevail over others more important. It costs a goodly sum to recruit, to transport and subsequently create out of the raw materials a trusty and instructed soldier, and all that sum is wasted if he be not preserved to the service and for duty." In the report of the first nutrition survey among U. S. Army troops in 1892, Captain Woodruff[1]

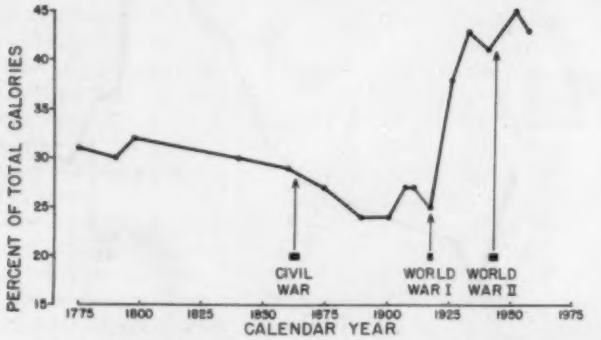

Figure 4—Fat: Per cent of Total Calories of Prescribed Army Rations, 1775-1957

observed that "The American soldier must and does have meat three times a day"; and from Captain Woodruff's data and the menus given by him it is evident that the soldier at this time was already receiving a generous and nutritionally adequate diet.

2. Adaptation to the changing conditions and concepts of naval and land warfare.

3. Growth of national and individual wealth.

4. Changing food habits.

5. Pressures from agricultural producers, government agencies, trade organizations, and the food industries. These urgencies to use certain foods have come about through:

a. Opening of the plains for corn and cereal crops

b. Expansion of grazing areas for cattle production

c. Development of a large dairy industry around urban areas

d. Increasing production of vegetable and orchard crops.

6. Improved technology and storage of foods.

7. Extension of transportation and distribution facilities.

The Soldier's Nutrient Intake

So far we have discussed the composition of the prescribed ration, the history of the changes in the ration, and some of the factors which have led to changes in the diet. How much food is really needed by the soldier? This question can be answered only by direct observation through surveys.

Results of surveys in four training camps[4] are shown in Table 4. The consumption of food in the mess at meal time and between meals was determined. Observations were also made on the food eaten in the post exchange and from other outside sources. The food served in the mess was weighed. Suitable composite samples were prepared of food taken on the tray, of food discarded from the tray, and of kitchen wastes. These samples were then analyzed for protein, fat, moisture, ash, and total calories (by bomb calorimetry).

Table 4—Nutrient Intake of Soldiers in Four Training Camps

	Range	Weighted Average
Calories	3,767–4,729	4,265
Protein, gm	116– 144	131
Fat, gm	164– 232	201
Carbohydrate, gm	457– 520	484

The energy content of food consumed from all sources varied from 3,767 to 4,729 calories, with an average of 4,265 calories. The protein intake varied from 116 to 144 gm, with an average of 131 gm. The fat intake varied from 164 to 232 gm, with an average of 201 gm, and the carbohydrate content varied from 457 to 520 gm, with an average of 484 gm. The results are almost identical with the calculated nutrients furnished by the Master Menu: 4,194 calories, 131 gm protein, 199 gm fat, and 470 gm carbohydrate.

The caloric requirements for weight maintenance may be calculated from the total nutrient intake and the change of body weight during the period of survey. An equivalent of 6.8 calories for each gm of loss or gain of weight per day has been assumed in the calculations which are shown in Table 5.

In four experiments, in which troops were engaged in moderate activities, the caloric requirement for weight equilibrium ranged from 2,812 to 3,304 calories, with an average of 3,175 calories.

In the four surveys already mentioned of troops in training camps undergoing basic training, the requirements ranged from 3,698 to 4,227 calories, with an average of 4,066 calories. This perhaps,

Table 5—Relation Between Degree of Activity and Caloric Requirement for Weight Maintenance of Soldiers, U. S. Army

	Range	Weighted Average
Moderate activity	2,812–3,304	3,175
Very active, infantry basic training	3,698–4,227	4,066

represents the upper limit of caloric requirements for sustained activities at a high level over a period of time.

Summary

The feeding of U. S. Army personnel is planned in accordance with minimal dietary standards which are based upon the recommended dietary allowances of the Food and Nutrition Board of the National Research Council, as modified by the special requirements of troops under various operational conditions. The Army basic standard prescribes the minimum intake of the physically active soldier in a temperate climate as: 3,600 calories, 100 gm protein, 700 mg calcium, 5,000 I.U. vitamin A, 75 mg vitamin C, 1.7 mg thiamine, 2.0 mg riboflavin, and 16 mg niacin. The Master Menu, which is used throughout the Army for procurement and serving of food, is planned to yield these nutrients.

During 1957 the average edible nutrients provided by the Master Menu were about: 4,195 calories, 131 gm protein, 199 gm fat, and 470 gm carbohydrate. The vitamins and minerals were well above the recommended minimal intake.

In surveys conducted in four training camps the average of nutrients consumed in the mess and from other sources was: 4,265 calories, 131 gm protein, 201 gm fat, and 484 gm carbohydrate. These results agree closely with the total edible nutrients provided by the Master Menu. The average caloric requirement for maintenance of weight of these very active young soldiers in basic training was 4,066 calories; the average for moderately active soldiers was 3,175 calories.

The history of military nutrition from 1775 to date, and the factors which contributed to changes in the Army diet during those years, are briefly reviewed.

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Recommended Dietary Allowances can be and are of considerable significance in the food industry. How they are used and what further might be done with them in this area is the theme of this paper.

THE USES OF THE RECOMMENDED DIETARY ALLOWANCES BY THE FOOD INDUSTRY

H. E. O. Heineman and Elspeth Bennett

IN A FIELD that has grown as rapidly as has that encompassing all the various facets of the science of food and nutrition, it is very difficult to pinpoint the effects of any one factor, such as the Recommended Dietary Allowances. In a science that daily increases in complexity, and whose implications become additionally involved in more and more phases of human existence, it is not easy to be sure of one's perspective. On the other hand, the very complexity of the field increases the importance of a framework of reference, such as the Recommended Dietary Allowances, providing as they do, a vehicle whereby many facts and principles are brought together and put into a form that can be translated into practical everyday use. Because it is of consequence to the food industry that the food and nutrition information established in the laboratories and clinics of the nation be soundly and correctly evaluated, interpreted, and applied, we believe that the food industry has a significant stake in the Recommended Dietary Allowances. Consequently, it is fitting that we analyze briefly the uses of the Recommended Dietary Allowances by the food industry, realizing in each instance that other influences may have, or may have had, a more or less important part.

The food industry recognizes that the Recommended Dietary Allowances are the result of a tremendous amount of work done by a group of dedicated authorities in the field whose standards of integrity are of the highest, and whose concern is prompted only by a desire to serve the best interests of science and of the general public. Human nature being what it is, the absence of compulsion and of governmental control enables the Recommended Dietary Allowances to enjoy an acceptance and a use on a voluntary basis, by the food industry which undoubtedly would be less generous if the Allowances carried legalistic force.

We believe that the Recommended Dietary Allowances may have had some part in awakening the consciousness of the food industry to the desirability of adding to their staffs personnel who are scientifically trained in nutrition and allied fields. Management became aware of the Recommended Dietary Allowances and realized that they needed to have their meaning, significance, and uses interpreted for them. This personnel has, for the most part, contributed to the upgrading of the standards by which the food industry operates. As such persons have become more closely integrated into the business team at the manage-

ment level, they have had an important part in causing the food industry to become aware of its responsibilities, not only to the American consumer as such, but also for research and education in the fields of food and nutrition. Let us grant that sometimes professional integrity has yielded to the multiple pressures of the profit motive, or that professional prestige has been allowed to be used more as a "front" than as a vital, contributing force in a sound and essential program, but these instances are so much in the minority that they hardly warrant notice. The wise industrialist of the present, whether within the food industry or without, knows that science is his best ally, if properly used. And, in few places on the American scene is science being used more generously and more effectively for the benefit of all than in every phase of the food industry—from the produce in the field to the product on the merchandiser's shelf.

The Recommended Dietary Allowances have been, and still are, a useful "guideline" for the food industry. Setting nutrient goals for individuals, as they do, they have helped to enlarge the horizons of many of the members of the food industry. The challenge to produce foods that would make the nutrient goals attainable by as large a proportion of the American people as possible has taken its place beside the recognized necessity to market them at a legitimate profit. The attempt to reach and to maintain high standards of nutrition is important to every segment of the population, to every type of business, but it is vital to the food industry. On the other hand, a food industry, striving to fulfill the proper vision of its important place in the stream of activities that feed the American people, is essential to the attainment of high nutritional standards. No matter how interested in nutrition, nor how knowledgeable the modern consumer may be, he has little influence upon the nutrient content of the foods he selects. Nutritive values are largely determined by the producers of the foods that find their way into his market basket. The Recommended Dietary Allowances, as the food industry's "guideline," have had a part in spurring research to seek crops of highest nutrient quality, to develop processing methods to avoid or limit nutrient losses, to find packaging materials and marketing systems to maintain original values in foods until consumed.

In some instances, the Recommended Dietary Allowances have been among the many considerations that enter into the determination of policies and procedures in food production. To fortify or not to fortify; to enrich or not to enrich—such questions have possibly been high on the agenda of one or more meetings of the executives responsible for the production and sales of most modern food items. Management has had available the many studies that revealed where the American diet needed bolstering, based on the Recommended Dietary Allowances, that offered professional and official approval, and that promised consumer benefits. These facts, balanced against studies of production costs, competitive efforts, product palatability, nutrient stability, and advertising potential have entered into decisions that have had major effects upon the nutritional health and well-being of the American people.

The Recommended Dietary Allowances have also been a determinant in establishing the level of fortification of some of our staple foods. Notable examples are Vitamin D milk and enriched bread and flour. It is all to the good that widely scattered and diversified industrial organizations have a set of unified nutrient allowances which can be freely used by each and all alike. How much better it is that all groups working for nutritional improvement have access to a system of common allowances

instead of being left to use varied and conflicting ones, with meager, if any, authoritative bases.

This brings us to a "result" of the existence of the Recommended Dietary Allowances rather than to a use by the food industry—probably more important—both to the general public and to the food industry. We believe that the Recommended Dietary Allowances have had a tempering effect on the fortification of competitive food products. They have prevented what would have been regrettable fortification races; indeed, they have made such races useless and nonacceptable. We live under a competitive system, and in no industry is competition greater than in the food industry. To survive, and to keep its place on the grocer's shelf, each product must use every legitimate means available to appeal to the consumer. Finding such means is the constant task of research, production, marketing, advertising, and sales. Fortification with essential nutrients offers fascinating possibilities, and because among the vast throng of consumers there are many who seem to believe that if a little of a thing is good, a lot might be better, the temptation to out-fortify one's competitor is understandable. But there would be little justification in a sales "pitch" based on fortification that provided intakes in excess of amounts in the Recommended Dietary Allowances. Milk is an outstanding example of this—the 400 USP Units of Vitamin D per quart given in the Recommended Dietary Allowances having become the uniform standard for fortified Vitamin D milk across the nation.

Not only have the Recommended Dietary Allowances functioned as a ceiling that has helped to keep fortification within reason, but also as a barrier against low and useless additions of nutrients. However, in this area, we must give due credit to the influence of, and the control exercised by, the Food and Drug Administration in the application of its minimum standards.

It is almost certain that the Recommended Dietary Allowances have entered into the considerations of some astute members of the food industry in determining certain marketing ventures. Used as a basis to estimate consumer need for some one nutrient in a specific geographical area, possible consumer interest in a promotional effort for the sale of a food item supplying that nutrient could be projected. Unfortunately, some promoters have chosen to base such efforts on the unauthenticated findings of unqualified pseudo-scientists. These instances emphasize the need, in some quarters, for greater promotion of the Recommended Dietary Allowances, always clearly delineating just what they represent, as well as pointing up their limitations.

We cannot avoid facing the fact that the Recommended Dietary Allowances have been misused by some members of the food industry. This misuse is probably inherent in any such table of values. The unscientific and the inadequately trained, as well as the less scrupulous, are eager to latch on to something as stable and definite as a set of figures on which to hang a product story. Those persons who do not approve of the Recommended Dietary Allowances use these instances to fortify this disapproval. But rather than a willingness "to throw the baby out with the bath water" it would seem much better to try to formulate a program to foster only intelligent and responsible use.

We are sure that all will agree that the Recommended Dietary Allowances are becoming more and more complicated. Current research projects, and the results being published, indicate that this trend will continue with increased intensity. When properly proportioned amounts of essential amino acids, and measured quantities of certain fatty acids are added to the nutrient list;

when nutrient interrelationships are brought more into the picture, the correct interpretation will become more and more difficult. Only the trained specialist will be able to elucidate and implement the proper use of the Recommended Dietary Allowances to the increasing numbers of thought-leaders—the doctors, the nurses, the teachers, the welfare agencies—who are using nutrition information in their work. It is well that a large number of such specialists are found in the food industry. Because people do not eat nutrients as such, the nutrient needs promulgated in the Recommended Dietary Allowances must be translated into terms of available foods. Many of the food and nutrition specialists within the food industry are doing just that through the educational materials they prepare and furnish, for the most part, free. In many instances, these materials reflect a feeling of responsibility to present overall, well rounded facts as simple guides to the selection of a well balanced diet. True, in some cases, the food produced by the company paying the bill for the materials may be in bold-face type, but it is fitted into its legitimate place in the diet. Whether these commendable materials are special diets for therapeutic use by physicians, charts to aid classroom teachers, or meal planning guides that ultimately reach homemakers, the information in them is checked and weighed against the Recommended Dietary Allowances.

Regrettably, we have to admit that all of the interpretations of new findings and some of the so-called educational materials produced by the food industry do not come up to commendable standards. The sales story sometimes distorts the nutritional truth. Currently, there are many influences within and without the business orbit that are striving to improve the situation. But these are matters that call for eternal vigilance and considered action on the part of all who are properly informed. Only when off-beat information is challenged, and below-standard materials are rejected, will they cease to be produced.

At a time and in a field in which a textbook may become obsolete almost before it is off the press, it is urgent that the educational materials produced by the food industry are of such a nature that they can be used with confidence and certitude. Thus, new findings can quickly be made available to supplement and bring up to date information at hand from other sources. But modern avenues of communication are so accessible that the broadcast "fact" often precedes the scientific report. Here, again, we believe that the Recommended Dietary Allowances can perform an important check-rein function. Emanating from an unbiased group of scientists, with no "axe to grind," no authority to assert, they can be looked upon as a carefully controlled compilation constantly reviewed in the light of new research. Thus, they can help the food industry to maintain stability and balance in the midst of the flood of new, confused and often conflicting research data on specific nutrients and nutrient needs. We hope that the Recommended Dietary Allowances will be even more generously and wisely used by the food industry in the future. We believe that the results can benefit all.

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This paper was presented before the Food and Nutrition Section of the American Public Health Association at the Eighty-Sixth Annual Meeting in St. Louis, Mo., October 28, 1958.

Here is the story of action by the organized medical profession to cope with alcoholism. The author has been involved in these activities from the outset and is able to present a straightforward account of an important development.

ALCOHOLISM AND THE MEDICAL PROFESSION

Marvin A. Block, M.D.

ALCOHOLISM has been known and recognized as an illness for many years. In the remote past, as well as more recently, a number of physicians have recognized this illness as a medical problem. Until comparatively recently, however, the organized profession as a whole did very little about it. In the last ten or 12 years there has been a noticeable change in the attitude of organized medicine and, consequently, of many individual physicians toward this disease. Before that time many enlightened physicians had at various times attempted to place alcoholism in its proper perspective as a medical problem. They met with very little success, however, due to a refractory attitude on the part of the organized profession. The attitude of medical organizations might have been due to the influence of the general public, which looked upon alcoholism more as a moral problem than a medical one.

Although he was not the first to hold the view, the commissioner of health of Buffalo at the turn of the century addressed the City Council on the problem of excessive drinking and stated his opinion that it was an illness and not a crime to be an alcoholic. He recommended that jail sentences meted out to correct the problem be changed to hospitalization for those people who habitually drank excessively, so that they could get medical care and proper rehabilitation. However, his words fell on disinterested ears, since not much was done about the problem. I am sure that many other physicians met with frustration in those days when they attempted to do something about alcoholism.

It is important that the medical profession as such take a stand on the matter of alcoholism, since it is to this profession that the public looks for guidance and leadership in health matters. Until an authoritative stand regarding certain illnesses is taken by the profession, many individual physicians feel that such conditions are not properly within the purview of their practice. In the past, this has been true of other illnesses.

Would any family physician, called in to see one of his patients, fail to look with suspicion upon a history of hemoptysis when the patient has a cough? Would any family physician fail to investigate further a history of vomiting blood? Even if these signs were not brought to his attention by the patient, would he not inquire from a patient with respiratory symptoms whether or not he had coughed blood? Would he not, where there is a case of gastric distress or digestive difficulty, inquire whether or not there had been any vomiting of blood or whether the patient

had passed tarry stools? With an affirmative answer in any of these cases, would he not, then, insist upon going into greater detail regarding the illness and using exhaustive diagnostic methods to make sure that a more serious problem does not exist, even though the patient did not appear extremely ill? No well informed, conscientious physician today would overlook significant signs such as these while treating a patient for what, on the surface, might appear to be a mild illness. It is in this role of case finder that the physician can prove to be of the greatest value in the problem of alcoholism. As with any other disease, detected in its early stages, it is far more amenable to treatment than later on when it becomes more serious. It is here that the role of the private physician is of the greatest importance.

Before the doctor becomes cognizant of his responsibility in this area, however, it must be brought to his attention. He must be exposed to education on the subject, and it is in this area that the organized profession itself plays its greatest part. It was to this end that the American Medical Association decided to call the attention of the American physician to the importance of his role in finding cases of alcoholism in its incipient stage, so that more severe sequelae could be prevented. The history of this movement in the American Medical Association is a very interesting one. Perhaps a few highlights may help us to understand the problem which confronted the organization and how it set out to meet this problem.

In 1948 a prominent physician of Erie County in New York, at one time president of his County Medical Society, having observed the successful efforts of Alcoholics Anonymous in rehabilitating alcoholics, felt that the problem properly belonged within the province of medicine. Through his efforts the County Medical Society appointed a Committee on Alcoholism with himself as chairman. He also helped to organize a Citizens Committee for Education on Alcoholism. The purpose of this educational committee was to bring the problem before the public, to indicate its extent, its many ramifications, and the possibilities of treating and rehabilitating patients suffering from the disease.

The purpose of the medical committee was to stimulate interest among physicians in the subject of alcoholism and to urge them to treat such patients from the medical viewpoint. This physician, himself a recovered alcoholic, then decided to carry his ideas up through the ranks of the organized medical profession to see if he could not get concerted national action toward increasing interest in this problem among doctors. As a result of his work, in June, 1950, a resolution was presented to the House of Delegates of the American Medical Association establishing a Committee on Problems of Alcoholism in that organization. With the passage of this resolution it was recommended that the problem be studied by an already existing Commission on Chronic Illness.

Six months later, in December, 1950, a new resolution was introduced in the House of Delegates asking that the previous action of the House be rescinded and that a special Committee on Problems of Alcoholism be appointed. This was referred to the Committee on Chronic Diseases. A year later, in 1952, a Committee on the Problems of Alcoholism was appointed as a subcommittee of the Chronic Disease Committee. About ten members were named to this subcommittee. As a member of that subcommittee, I know that it never met, because no appropriation was made for its meeting. With no money available the members of the committee could not get together.

In 1952, a year after the committee had been appointed, the chairman and I discussed this matter and the inability

of the subcommittee to meet because of lack of funds for this purpose. We wrote to the American Medical Association and its Chronic Disease Committee to ascertain what action had been taken regarding the possibility of a meeting of our subcommittee. We were informed that the subcommittee had been disbanded. Although we were members of the subcommittee, no notification had ever been received of the dissolution of the subcommittee. We then asked for action on this problem, namely, the appointment of a new committee. In addition, we asked that an appropriation be made so that it could function.

During this time, however, although the medical committee had not been able to carry out its work, the lay committee on education on alcoholism was functioning very well. The education committee in our area had become affiliated with the National Committee on Alcoholism, which now bears the name National Council on Alcoholism. The educational campaign in western New York was carried on energetically and began to bear fruit. As a result of its action, the University of Buffalo Medical School established a Rehabilitation Center for alcoholics. This was located in the Chronic Disease Institute under the auspices of the National Institute of Mental Health and the New York State Health Department, in conjunction with the University of Buffalo, as a tripartite arrangement.

In 1953 we invited the executive secretary of the American Medical Association's Committee on Mental Health to visit our facilities and discuss the matter of a Subcommittee on Alcoholism. The American Medical Association decided that the problem of alcoholism properly belonged under the Committee on Mental Health. As a result of our discussions with its executive secretary during his visit to Buffalo in December of 1953, a Subcommittee on the Problems of Alcoholism was appointed under the Committee on Mental Health, with the authorization of the House of Delegates. I was requested to take the chairmanship of this subcommittee. I accepted the position on the condition that we be given a free hand to act under the Committee on Mental Health and that sufficient funds be allocated for us to meet and operate. These conditions were met and the committee was appointed. On the committee were representatives from the New England area, the Middle Atlantic area, and the Southwest.

With an adequate annual budget early in 1954 the committee began its work. Our first meeting was held in Boston, Mass., on February 6, 1954. Since then, there has been considerable activity. So far, there have been 15 meetings. In addition, in cooperation with the Council on Scientific Exhibits, we have built two exhibits on alcoholism at a total cost of several thousand dollars each. These exhibits have met with an excellent reception wherever they have been sent. They are available for exhibit not only at the meetings of the American Medical Association conventions, but also for meetings of all state and county medical societies that request them.

The Committee on Alcoholism has succeeded in stimulating interest in the problem in the various state medical societies. Before this committee was formed there were very few state medical societies which had committees working on the problem; now there are committees on alcoholism or committees dealing with the problem in 37 of the 49 states. Some of the committees handling the problem bear such titles as Mental Health, Public Health, or Industrial Health. Since we do not study the activities of individual county societies, we have no way of telling how many such committees exist among the county medical organizations.

In 1956 our committee began a series of articles in the Journal of the Ameri-

can Medical Association under the auspices of the Mental Health Council. Over a three-month period, four articles appeared in the journal dealing with the medical, physiological, psychiatric, and sociological aspects of alcoholism. These papers were written by our committee members. Thousands of reprints of these articles have been distributed throughout the country as requests for this material poured into the headquarters of the American Medical Association. One order for 5,000 copies was received for one of these articles. I mention this only to emphasize the obvious interest on the part of the medical profession in the problem of alcoholism. Only such increased interest would stimulate that number of requests for information on the subject. It must be borne in mind that these articles appearing in the Journal of the American Medical Association are strictly for the medical profession.

Later in 1956, at the request of the Committee on Alcoholism, and through the Council on Mental Health, the American Medical Association purchased a complete set of the Abstract Archives of the Alcohol Literature, containing thousands of abstracts of articles on the subject of alcoholism. This set of Archives was placed in the headquarters of the American Medical Association in Chicago and announcement of its purchase appeared in the journal. The number of inquiries on the subject of alcoholism and its various ramifications was so enormous as a result of this announcement that the staff found itself swamped with requests and fell months behind in answering. If there had been any doubt in our minds before that the medical profession was interested in the subject of alcoholism, they were now dispelled. It was necessary that we send one of our staff to Yale University to learn how to operate the Archives files more efficiently in order to answer these inquiries within a reasonable time. Even so, it took months before the first avalanche of inquiries was answered. While the number of such requests has diminished somewhat since that initial announcement, it appears that this is not due to the lack of interest on the part of physicians, but rather to the fact that the availability of these Archives has not been again publicized. Another announcement of its availability, I am sure, will bring another wave of inquiries. Actually, we have purposely postponed such additional publicity because of the limitation of our staff. However, it will again be called to the attention of the profession in the near future and, as our staff increases, it will be continually put before them.

Later in 1956 a resolution was brought before the House of Delegates of the AMA urging all general hospitals throughout the country to admit alcoholic patients to their general medical floors. This resolution had been approved by the Council on Mental Health and the Board of Trustees. It was imperative that if physicians in training were to understand the problem that patients with the diagnosis of acute or chronic alcoholism must be admitted without prejudice to general hospitals. The resolution was unanimously passed by the House of Delegates. This represented a tremendous victory. The largest medical organization in the world had now recognized alcoholism as a disease which warrants admission to general hospitals for those suffering from it. Since then the resolution has been forwarded to the Council on Education and Hospitals, as well as the Committee on Accreditation of Hospitals. The purpose of this action is to promote education on alcoholism among hospital staffs and resident staffs so that patients suffering from this disease can be properly treated when they are admitted. Last year a similar resolution was adopted by the Board of Trustees of the American Hospital Association.

In 1957 the Committee on Alcoholism prepared for publication a manual for the use of medical practitioners. This Manual on Alcoholism consists of four articles printed in the journal, the guest editorial on alcoholism which appeared in the journal, the announcement and instructions for the use of the Abstract Archives of the Alcohol Literature, and other pertinent material useful to practitioners in treating alcoholic patients. In addition, the committee has also produced a directory of rehabilitation resources for those interested in the alcoholic patient. These are listed by states. This directory and the manual, an 87-page booklet, as well as individual reprints of the articles, are all available at national headquarters. Before it was printed the committee had already received 20,000 advance requests for the Manual on Alcoholism. This portends a successful distribution of this booklet. Apparently the medical profession was awaiting these steps for a long time and the publication of this volume will answer a long-felt need.

This year the committee is making a survey of the teaching of alcoholism in medical schools. This is being done in cooperation with the AMA Council on Education and Hospitals and with the Association of American Medical Colleges. At our last meeting in January we arranged for a study of what the committee feels is necessary in the way of education for medical students on the subject of alcoholism. The results will be forwarded to the American Association of Medical Colleges for its perusal and comment.

In addition, we are making a survey of the laws of the various states which relate to alcoholism. This study is being carried on in cooperation with the Legal Department of the American Medical Association. In all probability we shall enlist the aid of the bar associations at state levels and at the national level, as well. Eventually, we hope to formulate a uniform law regarding the handling of alcoholics and proper legal disposition of such cases. As you are aware, this is a tremendous undertaking and will occupy a great deal of our attention. We hope, before long, to publish a directory of the laws relating to alcoholism as they exist in the various states, so that any physician in doubt as to how to approach his alcoholic patients from a legal viewpoint can refer to this directory and find what his responsibilities and obligations are toward these patients.

The Committee on Alcoholism has approached Blue Cross headquarters regarding its attitude toward the payment of hospitalization expenses for patients suffering from alcoholism in the various areas of the country. This is another tremendous undertaking. As you are aware, various Blue Cross corporations have different regulations regarding this matter. We hope by publishing statistics of those corporations which do pay hospital benefits for alcoholism, we will be able to induce all Blue Cross corporations to pay for such hospitalization. I know that in the Buffalo area a study of the problem indicates that the patients suffering from alcoholism are no more expensive as far as the Blue Cross corporations is concerned than others suffering from other illnesses, and in this area they are entitled to full coverage—just as for other diseases.

I have already mentioned that the Committee for Accreditation of Hospitals has received the resolution on hospitalization of alcoholics which was passed by the House of Delegates in 1956. This committee is now studying the problem from the viewpoint of implementing the ideas which were incorporated in that resolution, as they relate to the qualification of hospitals for teaching purposes.

All the steps enumerated are part of the 18-point program which our committee adopted and presented to the Council on Mental Health in 1954. This 18-

point program is available to anyone who requests it. It outlines the proposed activities of the Committee on Alcoholism for the future, as well as some of the points which we have already accomplished. For those who are interested this program can serve as a model for state programs, since the same activities which have been carried on at the national level can be undertaken by state medical societies at their level. If each state were to carry out the points of this program, it would make our task a great deal simpler and would hasten a uniform approach to the problem throughout the country.

Other activities of the Committee on Alcoholism which have been promoted throughout the past several years have also been directed to educating the profession on the subject of alcoholism. In 1954 a conference of mental health representatives from all state medical societies was held in Chicago, under the auspices of the Mental Health Council. The conference was devoted to the problem of alcoholism and discussions took place at the headquarters of the American Medical Association. Thirty-six state medical societies were represented. Various aspects of the problem were discussed and the state representatives were urged to carry back to their societies the message promoting interest and education on alcoholism.

In 1956 another conference was held at which 65 representatives from 41 states were present. These were mental health representatives from the state medical societies. Alcoholism, of course, was not the only subject which was discussed. The program was divided into four parts: Child Psychiatry, Hypnosis, Tranquilizing Drugs, and Hospital Treatment of Alcoholics. The meeting was organized in workshops. The members were divided into the four groups and given a choice as to which subjects or workshops they wished to attend. Of the four workshops, Hospital Treatment of Alcoholics drew about twice as many people as any of the other three, and certainly all the subjects were fascinating. I mention this only to illustrate the increased interest in the treatment of alcoholics in the country.

In 1957 the Mental Health Council permitted our Committee on Alcoholism to provide a new service to physicians. It authorized us to hold institutes on alcoholism for any state medical society that would request it. We were given authority to hold as many as three institutes annually. To date, we have held three such meetings, one in San Francisco for the California State Medical Society, one in Galesburg, Ill., for the Illinois State Medical Society and several county societies from adjoining states and areas, and the third was held in Colorado Springs by the Colorado State Medical Society. All institutes were considered outstanding successes, judging from the responses of the physicians attending. Not only were the talks given at these institutes instructive to physicians, but the discussions were stimulating and provocative. These meetings gave the doctors an opportunity to voice their opinions, to relate their experiences, and to exchange ideas on treating this problem from the physician's viewpoint.

But the organized profession itself can be of very little help unless the individual physician recognizes his responsibility in his own community to the patient suffering from alcoholism. One thing is clear. He can no longer avoid this issue. He can no longer neglect these patients. He cannot "pass the buck." He must treat them. There are methods, and satisfactory ones, for doing this. There is sufficient evidence that good results can be obtained. True, we cannot promise cures, since a cure would imply that the patient might be able to drink normally again. However, complete recovery can be attained by the patient with the help of his physician, and it is to this end that the

doctor must work. Properly trained in the medical approach to this problem, and with sufficient psychiatric orientation, very satisfactory results can be obtained with most patients. It must be recognized that there is no specific routine for this disease. There is no antibiotic or chemical miracle drug which will do away with the illness. The physician must spend sufficient time with his patient. He must not only rehabilitate him physically, but he must help him to mature emotionally. This cannot be done with "shotgun prescriptions" or pills. It requires time, patience, and investigation. The physician must study this disease as he does other diseases, its etiological factors, its background, and its history. He must do complete physical examinations. He must perform necessary laboratory tests. He must make definite evaluations, and he must pursue the therapeutic programs with thoroughness and understanding. There are available to the physician that wants them postgraduate courses on this disease, as there are for others. If they do not exist in his own area, then he must request or organize such courses. The Committee on Alcoholism of the American Medical Association stands ready to help him in these matters. If he will request of his state medical society or his county medical society that such courses be given and such education be made available, they, in turn, can request help from our committee and we will be more than happy to supply them if necessary with information or actual teaching facilities.

In addition, the physician must serve as a case finder. As with other diseases, the answer to this problem lies in prevention rather than in therapy. Therapy must be provided for those patients who are presently suffering from alcoholism, but prevention of this disease, as with many others, is the eventual solution to the problem. It is important, therefore, that the physician be a case finder. It is important, also, that his history of any patient include a detailed history of his drinking patterns. The slightest indication of trouble as a result of drinking should alert the astute physician to the possibility that here is a potential alcoholic. By instituting proper prophylactic measures, by careful advice, many cases of alcoholism can be prevented. Just as the competent physician will look upon hemoptysis as a possible sign of tuberculosis, gastric distress as a possible forerunner of peptic ulcer, glycosuria as a possibility of diabetes, so he must look upon trouble as a result of drinking as an indication of a possible case of alcoholism. It is never too early to detect these signs if one keeps a weather eye open for them.

In addition to the practicing physician, other medical agencies must be used in combating the problem of alcoholism. Not the least of these is the general hospital. The general hospital should accept these patients as sick people who deserve and require their attention. Acute alcoholic intoxication can be, and often is, a medical emergency. Hospital beds should be made available to such sick people. They must be adequately treated from the medical as well as the psychiatric viewpoint. Hospital personnel should be properly instructed, not only in the medical and psychiatric therapies for this disease, but also with the proper attitude which should be adopted toward such patients. One does not scold a sick person or lecture him because he is sick. The proper approach toward any sick person is a great step toward helping him, and the attitude of the therapist is a tremendous step toward having the patient accept the kind of help which he requires. House staffs must be properly trained in this attitude and this approach.

All hospital personnel should be instructed about treating these patients and all must adopt the proper attitude toward them. This is especially impor-

tant for the nurse. The nurse in her community has three capacities professionally. First, she, too, is a case finder. This is especially true of the district nurse. She, more than anyone else, perhaps, can detect the early signs and symptoms of alcoholism in members of the families which she visits. A timely warning can prevent a great deal of grief for such a family. On many occasions, members of a family will confide in a visiting nurse more than they will in anyone else. Here, then, is her opportunity to serve as a case finder and refer these people to the proper resources for help. I need not add that in her actual nursing service she can also be of tremendous help.

The attitude of the nurse in treating the sick alcoholic is one of the greatest therapeutic measures that can be brought to bear on these patients. Her sympathetic approach and her understanding of his problem can be the turning point in his motivation. Often the patient will confide in the nurse many things which he cannot or will not tell his physician. Such information conveyed to the doctor can in many cases help the physician understand the problems which beset these patients and he can then put the patient's mind at rest or open an avenue for proper discussion.

The third area in which the nurse can be of great value is her role as an educator in the community. Of course, this also includes the physician. We must remember that we cannot afford to be only doctors and nurses. We are also citizens, and as such we must take an interest in our communities. We must take sufficient interest in the problems to engage in activity with the lay groups for education in alcoholism, as well as in professional groups. Both physicians and nurses can carry the message of sympathy and understanding for these patients, so that they can help them to acquire the kind of aid which they need and to refer them to the resources to which they can go for such help.

Where all the facilities which can be provided are brought to bear by the physician and the ancillary professions, and where there is sufficient understanding of the problem on the part of all these people, enough interest can be stimulated toward gaining more knowledge about it. As with many medical problems in the past, increased research and resulting knowledge will eventually lead to the answers which are sought.

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In this report the Luoto capillary agglutination milk test is shown to be a reliable and valid tool for the identification of dairy cows infected with Q fever.

APPLICATION OF THE LUOTO CAPILLARY AGGLUTINATION MILK TEST TO THE STUDY OF BOVINE Q FEVER

Richard A. Tjalma, D.V.M., and John L. Braun

Q FEVER was first reported by Derrick[1] in Australia in 1937. In the relatively brief span of 21 years the disease has progressed from the realm of medical obscurity to a position of military and public health significance in 51 countries on five continents. Recognition of the military significance[2-4] of the disease served to call attention to the existing and potential public health importance of Q fever. Recent reports from various sections of this and other countries indicate a progressively greater awareness of the disease.[5-10]

Indications are that evidence of Q fever infection in man and animals may be found in almost any area of the country. Although the disease appears to be widely distributed, recognition is difficult. Domestic ruminants serve as the reservoir and source of human infections[11-13]; however, infection in these species is devoid of any clinical signs or recognized economic significance.[14,15] Thus, Q fever infection in domestic ruminants may easily escape detection. In addition, human infections are frequently of a relatively mild, pulmonary-febrile nature and may be confused clinically with a variety of similar illnesses. Until recently the complement-fixation test was the only available serodiagnostic procedure for Q fever; the limitations of the Q fever complement-fixation test are well recognized.[16]

Luoto has recently developed a capillary agglutination test for the serodiagnosis of Q fever in man, sheep, guinea pigs,[17] and cattle.[18] Previous studies have demonstrated the exceptionally high reliability and validity of the capillary agglutination serum test.[8,17,18] The speed, low cost, and efficiency of this procedure promises to facilitate Q fever research. The capillary agglutination test is applicable to bovine milk specimens.[19]

Former studies[8,20] on Q fever in Iowa revealed 0.7 per cent of 12,000 dairy cows to be serologically positive for Q fever. Approximately 3.25 per cent of 767 herds distributed throughout the state were found to contain one or more cows serologically positive for Q fever. Coxiella burneti was isolated from the milk of serologically positive cattle. Clinical and serological evidence of human Q fever infection was obtained.[9] This study was designed to evaluate the Luoto capillary agglutination milk test as a method of identifying and documenting bovine Q fever infection. In addition, the practicality of testing bulk or pooled herd milk samples for evidence of herd infections was investigated.

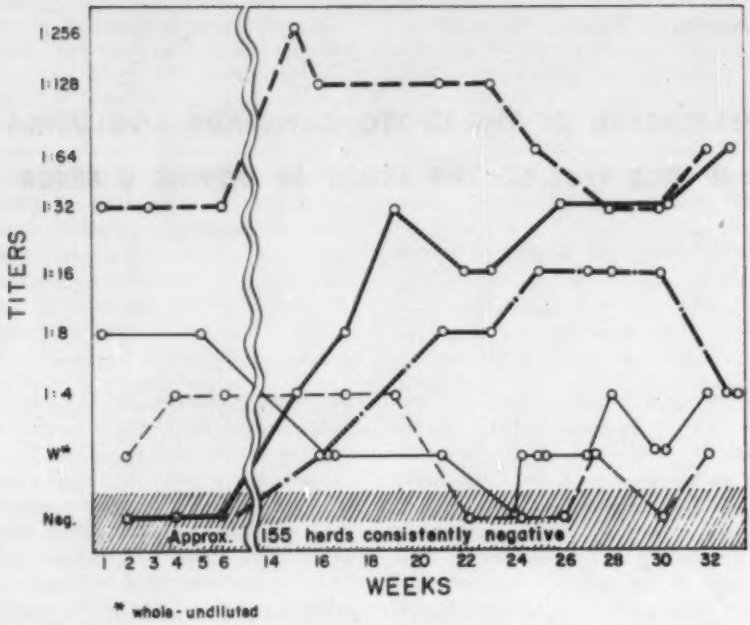

Figure 1—Consecutive C.A.T. Titers of Pooled Herd Milk Samples from Five Dairy Herds

Table 1—Comparison of Pooled Herd and Individual Milk C.A.T. Titers

Herd no.	Pooled herd milk titer	No. cows in herd	No. positive cows in herd	Number cows with milk* titers of :									
				Neg.	W**	1:4	1:8	1:16	1:32	1:64	1:128	1:256	1:512
1	1:64	13	6	7			2			1	1	2	
2	1:8	16	9	7			2	2	2	2	1		
3	1:4	59	6	53	1	2		1			2		
4	1:32	43	9	34		2	3		3				1

* = composite udder sample
** = whole undiluted

Materials and Methods

Test Procedures and Isolation Methods—Bovine sera were tested by the Q fever capillary agglutination test.[18] Milk specimens were tested by the same method,[19] except that raw milk from cattle serologically negative for Q fever was used as diluent in milk test titrations. C. burneti was isolated by standard guinea pig methods. Blood specimens were obtained from adult guinea pigs by cardiac puncture prior and five weeks subsequent to intraperitoneal inoculation of 1 to 5 ml of suspect infectious milk. Paired pre- and postinoculation sera were tested by capillary agglutination[17] for evidence of induced serological response for Q fever.*

Source of Bovine Blood and Milk Specimens—Bulk or pooled herd milk samples were secured through the courtesy of a small commercial dairy processing plant. Milk from approximately 160 dairy herds is processed by this dairy. Semimonthly pooled herd (bulk) milk samples are routinely collected for bacterial examination from each of the dairy herds. Samples are collected more frequently in the event of unsatisfactory bacteriological examination results. For a period of 26 weeks an aliquot part of each pooled herd milk sample collected was routinely tested for Q fever. Milk and blood specimens were collected from individual cattle by visiting the respective dairy herds. When a single (composite) milk specimen was collected from an individual cow, an effort was made to secure an equal quantity of milk from each udder quarter.

Results

A total of 1,942 pooled herd milk samples from approximately 160 dairy herds were tested over a 26-week period; each herd was tested on the average of 12 different occasions. Samples from five (3.13 per cent) of the 160 herds tested proved to be Q fever-positive. Each of the five herds was found positive at a titer of 1:4 or greater on four or more separate tests. The titers of the consecutive herd samples from each of the five herds reflect a consistent trend or level of herd positivity (Figure 1).

The remaining 155 herds were consistently negative except for four herds, each of which was found positive on a single test. In each case the sample was "positive" only when tested undiluted; individual milk specimens collected from the cows in two of these four herds proved to be negative. Individual milk samples were collected from the cows in four of the five herds found repeatedly positive at titers of 1:4 or greater; in each case a number of the individual milk samples were found to be positive (Table 1).

Blood and milk specimens were collected from 171 dairy cows located in herds having a positive pooled herd milk test. A high correlation was demonstrated between the test results on the blood and milk specimens from individual animals (Figure 2). Of 102 attempted rickettsial isolations from positive milk samples, 42 were successful. Isolation attempts were unsuccessful on 22 negative milk samples. In general, the isolation rate increased as the titer of the milk sample (Figure 3).

A total of 134 sets of individual quarter milk specimens were collected from 60 cows in four Q fever infected herds. Capillary agglutination test results on the quarter samples from individual cows revealed that both positive- and negative-producing udder quarters may be present in the same animal. The number of positive quarters ranged from one to four (Table 2).

Repeat specimens from 134 quarters, collected at a one-day interval, revealed

* Acceptable evidence of isolation consisted of serological negativity of the preinoculation specimen and a titer of 1:8 or greater of the postinoculation specimen.

Milk samples		Number of serum specimens at C.A.T. titers of:									
C.A.T. titer	Number	Neg.	W†	1:4	1:8	1:16	1:32	1:64	1:128	1:256	1:512 or>
Neg.	83	82	1								
W†	6	2	4								
1:4	2			2							
1:8	8				2	5	1				
1:16	16				1	9	5	1			
1:32	21					4	10	6	1		
1:64	12					2	3	3	3	1	
1:128	10						2	3	4		1
1256	9						1	3		5	
1:512	4										4
Total	171	84	5	2	3	20	22	16	8	6	5

* composite udder sample

** cows from dairy herds with C.A.T. positive pooled herd milk specimens

† whole - undiluted

Figure 2—Comparison of Q-Fever C.A.T. Titers of Serum and Milk* Samples from 171 Suspect Infected Cows**

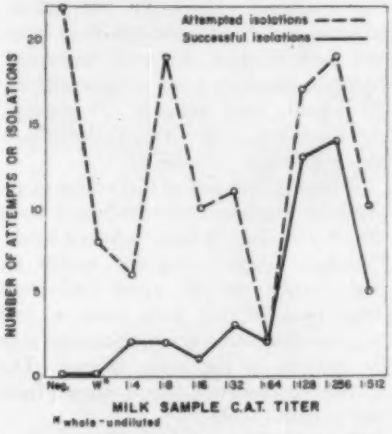

Figure 3—Correlation of C.A.T. Milk Titers and Rickettsial Isolations

Table 2—C.A.T. Results of Individual Quarter Milk Samples from 60 Cows from 4 Q Positive* Herds (Based on 134 Tests)

Number of udder quarters positive per cow	Herd number				Total
	1	2	3	4	
Four	11	19	8	19	57
Three	3	1	2	6	12
Two	5	4	6	2	17
One	1	5	2	1	9
None	15	18	5	1	39
Total	35	47	23	29	134

* consistent C.A.T. positive pooled herd milk tests

a variation of 0.052 in the positivity-negativity status of the individual quarters (Figure 4). Repeat specimens collected from 92 quarters at a one-month interval revealed a variation of 0.217 in the positivity-negativity status of the individual quarters (Figure 5). After an interval of three months repeat specimens collected from 70 quarters revealed a variation of 0.242 (Figure 6).

Discussion

The reliability of the Luoto Q fever capillary agglutination milk test, as performed on pooled herd milk samples, is demonstrated by the consistency of the test results obtained on 1,942 samples from five positive and 155 negative dairy herds over a 26-week period. The variation in the titers obtained on the successive pooled herd samples from each of the five positive dairy herds may be interpreted as reflecting actual changes in the Q fever status of individual animals within the herd. The fact that each of the four positive herds investigated contained a number of cows producing positive milk further demonstrates the reliability of the test. Each of four apparently negative herds was found

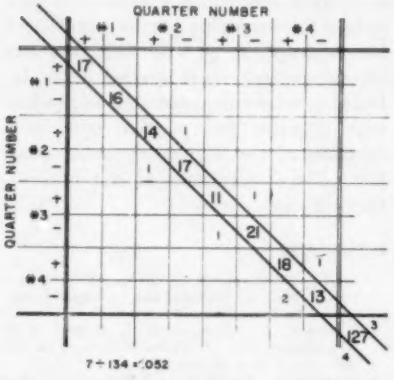

Figure 4—Comparison of C.A.T. Results of 134 Quarter Milk Samples, Test Interval—One Day

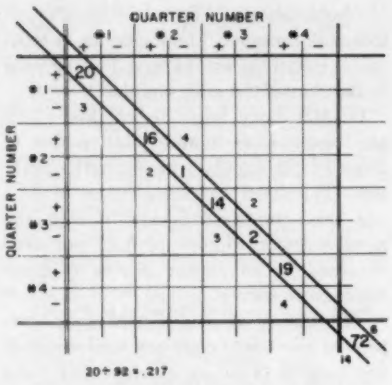

Figure 5—Comparison of C.A.T. Results of 92 Quarter Milk Samples, Test Interval—One Month

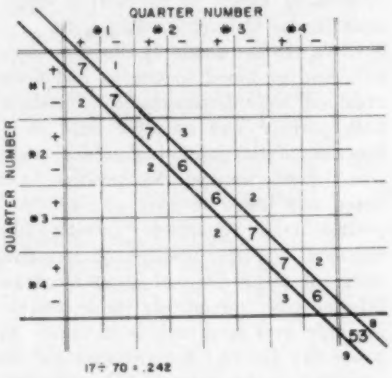

Figure 6—Comparison of C.A.T. Results of 70 Quarter Milk Samples, Test Interval—Three Months

positive on a single test. In each case the reaction occurred only at the undiluted level; in all probability these four tests were either misread or incorrectly identified.

Correlation of milk and blood Q fever titers of individual animals demonstrates the validity of the capillary agglutination milk test. The validity of the test is further documented by rickettsial isolations from positive milk samples.

No isolations could be made from negative milk samples. The incidence of rickettsial isolations was observed to increase as the titer of the milk samples.

Of 160 dairy herds tested, five (3.13 per cent) were found positive for Q fever by the capillary agglutination milk test. This herd incidence figure of 3.13 per cent compares favorably with the herd incidence figure of 3.25 per cent obtained in an earlier bovine Q fever serological survey.

The testing of pooled herd milk samples by the Luoto capillary agglutination test proved to be an efficient and valid method of rapidly surveying large bovine populations for evidence of Q fever infection. The general availability of pooled herd milk samples provides an economical means of conducting large-scale bovine Q fever investigations.

Cows, from which Q fever-positive milk and/or blood specimens had been obtained, were demonstrated to produce both positive and negative milk as a function of the individual udder quarters. Each serologically positive cow tested was found to have one or more positive udder quarters. Investigation revealed that the positive or negative status of the individual quarters of an infected cow is relatively stable, changing only over long periods of time. At a one-day interval the variation in the positive-negative status of 134 individual quarters was demonstrated to be 0.52, as compared to 0.217 at a one-month interval (based on 92 quarter tests), and 0.242 at three months (based on 70 quarter tests).

These data suggest the individual udder quarters are the site of localization of Q fever infection in the bovine. Likewise, these data indicate the individual udder quarters are capable of antibody production. On the other hand, there is a possibility that antibody, produced in some other part of the body, succeeds in passing the mammary tissues of certain udder quarters, perhaps as a result of tissue damage; such tissue damage may be due to localization of C. burneti in that particular udder quarter.

The progressive involvement of udder quarters may be related to gestation. Infected ruminants are known to shed enormous numbers of rickettsia in the fetal membranes and vaginal dejecta at parturition.[12,13] A transitory rickettsemia, occurring at or near parturition, could succeed in infecting additional udder quarters, particularly if the uninfected quarter was mastitic or traumatized. Reversion of udder quarters from positive to negative is associated with a loss of infection.

These data clearly indicate the necessity of collecting a composite or complete milk sample for purposes of capillary agglutination testing or rickettsial isolation procedures. An effort should be made to secure approximately equal quantities of milk from each udder quarter.

Summary

The Luoto capillary agglutination milk test is demonstrated to be a reliable and valid method of identifying Q fever infected dairy cows. The testing of pooled herd milk specimens is discussed as a rapid, efficient, and economical procedure for surveying bovine populations for evidence of Q fever infection and identifying individual infected herds. Infected cows are demonstrated to produce both negative and positive milk as a function of the individual udder quarters. The implications of this observation are discussed.

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The Q fever antigen used in this study was produced and supplied by Dr. Lauri Luoto, Rocky Mountain Laboratories, Public Health Service, Hamilton, Mont.

The concept of "maternal prediabetes" is far from clear. This is a preliminary report of a study now being conducted to see whether such a condition exists, and, if so, how it may be detected in a practical manner. It is hoped ultimately on this basis to be able to point the way to prevention.

MATERNAL PREDIABETES AND OUTCOME OF PREGNANCY—A PRELIMINARY REPORT

Hugh L. C. Wilkerson, M.D., M.P.H., F.A.P.H.A.

IT HAS BEEN SAID that "coming events cast their shadows before."[1] Can certain shadows of the condition known as diabetes mellitus be discerned far enough in advance to prevent or delay the eventuality of the disease? For varying periods of time before overt diabetes mellitus actually is diagnosed in a woman she may give birth to big babies, frequently stillborn or, if alive, often "cushingoid," ponderous, plethoric, or edematous and in whom neonatal death commonly occurs. Such pregnancy experiences are said to be associated with latent abnormal carbohydrate metabolism characterized by transitory hyperglycemia,[1-3] with or without glycosuria. Hypothetically, this state may be termed "maternal prediabetes."

The incidence of large babies, weighing 10 pounds or more at birth, being born to prediabetic mothers is reported to average about 20 per cent.[2] The expected incidence of large babies among the general population is about 2 per cent.[2,4] In the general population the mortality rate of such large babies is about two to three times that of normal size babies, that is those weighing five pounds, nine ounces to nine pounds, 15 ounces.[2,4] Although the increased incidence of large babies among offspring of prediabetic mothers is most pronounced during the 20 years preceding the diagnosis of overt diabetes, a history of the birth of big babies may go back many years earlier.[5]

According to Allen,[6] a high rate of fetal loss is attributable to this abnormal metabolic state in pregnancy. Reports in the literature show fetal and neonatal mortality rates in prediabetic mothers range from 20 per cent to 39 per cent in the five-year period immediately preceding the development of overt diabetes, although such fetal wastage and neonatal mortality seem to be increased appreciably among offspring as much as 30 years prior to the diagnosis of frank diabetes.[2,7,8]

In addition to increased frequency of large babies being born and increased fetal and neonatal death rates, it is also reported that a likelihood exists among both diabetic and prediabetic pregnant women of a high frequency of prematurity, polyhydramnios, breech presentation, and toxemia.[9]

Increased incidence of congenital defects has been reported by some authorities,[3,9] but has not been found in the experience of others.[2]

Some clinical authorities contend that no one has yet been able to ascertain whether so-called "prediabetes in pregnancy" is anything other than a mild subclinical diabetes mellitus.[2,10] They emphasize that there may be only an artificial distinction between the conditions of prediabetes and overt diabetes. Their argument is based on the accepted fact that the natural course of gestation and the characteristics of babies delivered in "maternal prediabetes" are largely, if not entirely, the same as those seen in pregnancy in overt diabetic mothers.

Hoet[3] says that pregnancy itself exerts a diabetogenic influence, and, in support of his theory, compares the frequency of a family history of diabetes with multiparity in women who develop diabetes themselves. A family history of diabetes was more frequent among diabetic women who had no, or relatively few, pregnancies; conversely, women developing diabetes after multiple pregnancies had a family history of diabetes less frequently. He concludes that the physiologic derangements associated with pregnancy per se contribute to the development of diabetes in women who have been pregnant many times.

A normally functioning pancreas in a pregnant woman presumably can overcome potentially diabetogenic factors in pregnancy, such as hypercorticism or increased presence of corticosteroids. A woman who has any degree of inherently lowered pancreatic reserve or islet defect often cannot compensate for the added stress of pregnancy, although in the nonpregnant state and outside of similarly stressful situations, she reacts normally in nearly every way. Later in life, beyond the childbearing age, the cumulative total of insults to the endocrine system completely overrides her metabolic reserve and she finally becomes permanently diabetic. The intrauterine environment during these stressful experiences of pregnancy may make the child more suspectible to diabetes.[3]

A precise definition of "maternal prediabetes," if such a state actually exists, therefore continues to be elusive. Clinical investigators, however, continue to describe the important health problems which have been mentioned as related to such a state.

The absence of clinical symptoms has been one handicap which has for many years prevented the routine recognition of this temporary metabolic abnormality occurring in certain pregnancies.

It is thought that prediabetes in pregnancy can be diagnosed with certainty only by means of a glucose tolerance test. It is emphasized more and more that a fasting blood sugar alone is grossly insensitive when one is looking for early abnormalities in carbohydrate metabolism. We have found that very few of the patients with abnormal tolerance curves occurring in pregnancy have elevated fasting blood sugar levels.

Without evidence to the contrary it is believed that, in addition to those women having chemical laboratory signs of hyperglycemia, glucose tolerance tests should be given to those with a history of previous pregnancies resulting in stillbirths, neonatal deaths, or large babies, and to those women who themselves weighed more than 10 pounds at birth.[3] A history of diabetes in the family is also considered by some to warrant a glucose tolerance test.

If there is an abnormality of glucose tolerance detectable in any trimester of pregnancy, Hoet[3] recommends prescribing maximum tolerated doses of insulin and terminating the pregnancy at the 35th week. He believes insulin is necessary to protect pancreatic function of the mother and to prevent hyperplasia of the Islands of Langerhans in the fetus. In more than 50 cases of presumably prediabetic women Dr. Hoet has applied this regimen. In all these pregnancies there was a successful outcome, although in each case there was a past history of

fetal wastage or neonatal death. He contends that the recognition of abnormal carbohydrate metabolism as early as possible in pregnancy and institution of immediate and aggressive corrective therapy with insulin and diet will not only promote a successful outcome of the pregnancy, but will reduce the later development of diabetes in such women and also prevent the development of diabetes in their offspring.

Most current theories on "maternal prediabetes" are based on retrospective studies among diabetic women past the childbearing years. The validity of such studies is questionable because there is no information on women having similar complications and abnormalities of pregnancy who do not become diabetic later in life or who do not survive to the time when the study is undertaken. There is also no possibility in retrospective studies of testing methods for the prevention of diabetes or pregnancy abnormalities associated with prediabetes. On the other hand, a carefully controlled prospective study offers the opportunity to evaluate the significance of the findings of the reported studies. Optimistically, methods might be tested in such a study for both the reduction of fetal loss and the prevention or delay of the onset of diabetes in mothers and their children. In any event, a clarification is needed of these observations and premises offered by excellent clinical and laboratory investigators in this field.

Method of Study

Since April, 1954, the Chronic Disease Program of the Public Health Service has been conducting a study[11] of certain characteristics of abnormal carbohydrate metabolism in pregnancy in relation to outcome of pregnancy and possible reduction in fetal wastage and later development of diabetes. This study has been possible with the cooperation and assistance of the Boston City Hospital and the Boston Lying-In Hospital.*

The study has two general objectives. One is to verify clinical observations and retrospective studies on "prediabetes" in pregnancy by determining:

1. If women with abnormal carbohydrate metabolism during pregnancy actually have a higher rate of fetal wastage and certain complications—including oversize babies, prematurity and congenital anomalies—than those with normal tolerance.
2. If women with abnormal carbohydrate metabolism in pregnancy actually develop frank diabetes in subsequent years at a higher rate than women with normal carbohydrate tolerance.
3. If children born of mothers who have abnormal carbohydrate tolerance in pregnancy do develop diabetes more frequently or have more abnormalities in glucose tolerance tests than children born of mothers with normal metabolism in pregnancy.

The other objective is to determine whether insulin treatment of women with abnormal carbohydrate metabolism in pregnancy will (1) delay or prevent the onset of diabetes in women and their offspring; (2) lower the rate of fetal and/or neonatal mortality; and (3) decrease such complications as oversize babies, toxemia, prematurity, congenital anomalies, and other abnormalities.

If the study should confirm the relationship of abnormal carbohydrate metabolism in pregnancy to abnormal outcome, and should insulin treatment reduce fetal loss and other complications, and/or prevent or delay the onset of diabetes mellitus, the study methods will have pointed out practical means for detection, definitive study, and preventive treatment of those women with such abnormalities in pregnancy.

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* The Massachusetts State Department of Health has encouraged us, given advice and consultation, and provided valuable laboratory space. In order to carry out this project it was necessary to have a special care service program; the Children's Bureau of the U. S. Department of Health, Education, and Welfare has provided most valuable assistance in improved services for prenatal, postpartum, and well child care for the mothers and their children in this project.

For purposes of this study the status of carbohydrate metabolism in pregnancy is determined by giving a standard three-hour, 100 gm glucose tolerance test to all pregnant women who are found to meet any one or more of the following screening criteria:

1. A venous blood sugar of 130 mg/100 ml or more, one hour after taking 50 gm of glucose by mouth.
2. A history of diabetes in the family.
3. A history of having borne a baby weighing 9 pounds or more.
4. A history of any of the following in two or more pregnancies: (a) fetal death, (b) neonatal death, (c) congenital anomaly, (d) prematurity, and (e) toxemia (excessive weight gain, hypertension, albuminuria).

Except for previously known diabetics all pregnant women at the two hospitals, Boston City Hospital and Boston Lying-In Hospital, are screened by these criteria the day they register for prenatal care in the hospital outpatient department. All those meeting any one or more of the criteria are scheduled for an oral glucose tolerance test as soon as possible, usually within seven to ten days after registration.

Women meeting the screening criteria, who have a normal glucose tolerance test (GTT) in one trimester, receive repeat tests in each subsequent trimester under our observation.

Abnormal carbohydrate metabolism in pregnancy is considered to exist when two or more blood sugar readings in the glucose tolerance test equal or exceed the following:

Fasting—110 mg/100 ml
1 hour after 100 gm glucose—170 mg/100 ml
2 hours after 100 gm glucose—120 mg/100 ml
3 hours after 100 gm glucose—110 mg/100 ml

All women with an abnormal GTT in any trimester and who have not reached the 37th week of pregnancy are selected for the study. Every second woman with an abnormal GTT is selected for insulin therapy for the remainder of her pregnancy. No insulin is given after delivery, except when it is indicated because of evidence of clinical diabetes existing postpartum. Those women with abnormal glucose tolerance tests for whom insulin is not prescribed are observed as controls. In addition a random sample of women regardless of screening results but confirmed as being normal by glucose tolerance tests repeated in each trimester are selected for long-term follow-up. These have been designated "negative controls."

These four groups are under careful observation throughout management of pregnancy and the postpartum follow-up:

1. Women with abnormal glucose tolerance tests who received insulin during pregnancy—termed "insulin treated" group.
2. Women with abnormal glucose tolerance tests for whom insulin was not prescribed—termed "positive control" group.
3. Women with normal glucose tolerance tests selected at random—called "negative control" group.
4. A very small group of women with abnormal glucose tolerance tests who were selected for insulin treatment but refused such treatment.

This careful observation covers screening for abnormalities, prenatal care in the study clinic, postnatal care of the mother and child, repeat glucose tolerance tests of the mother at six to eight weeks postpartum, careful examination of mother and child, tolerance testing annually for a period of at least 15 years, well baby care for infants, and observation with special reference to the possible development of diabetes and autopsy, where possible, in case of fetal loss.

In a fifth group of diabetic women the course and results of their pregnancy and the development of their offspring are also under observation.

Results

Since this is a continuing study any finding or conclusion at this time is in-

Table 1—Outcome of First Study Pregnancy, by Study Category Abnormal Carbohydrate Metabolism in Pregnancy Study, Preliminary Data, April, 1954-June, 1958

Outcome	Normal CHO Metabolism		Abnormal Carbohydrate Metabolism			
			Treated with Insulin		Positive Controls	
	Negative Controls					
	No.	Per cent	No.	Per cent	No.	Per cent
Total delivered with known outcome	184	100.0	181	100.0	199	100.0
Normal infants under 9 lbs	143	77.7	144	79.6	134	67.3
Abnormal outcomes, total	41	22.3	37	20.4	65	32.7
Live: 9 lbs or more at birth	9	4.9	8	4.4	26[1]	13.1
Live with congenital abnormality	7[2]	3.8	6[3]	3.3	14[1,3]	7.0
Live: premature	19	10.3	20[3]	11.0	20[3,4]	10.1
Therapeutic abortion	..	..	..	..	1	0.5
Fetal death	5	2.7	3	1.7	5	2.5
Neonatal death	2[2]	1.1	1	0.6	6[4]	3.0

[1] Two infants weighing more than 9 pounds also had congenital abnormalities.
[2] One infant with congenital abnormality was also a neonatal death.
[3] One premature infant also had congenital abnormality.
[4] Four premature infants were also neonatal deaths.

deed preliminary and subject to change as more data are accumulated.

Through June 30, 1958, of the total number of 14,988 pregnant women screened, there were 6,332 who screened positive by one or more criteria. Of 5,523 women who had at least one glucose tolerance test, 478 had at least one positive test, representing 8.7 per cent of those who received the tolerance test, or 3.2 per cent of the total number of women screened.

The results of glucose tolerance tests by the various screening criteria are worthy of note. As would seem logical, those positive on blood sugar screening had the highest rate of abnormal glucose tolerance tests, namely 15.9 per cent. In addition to the women who were positive, glucose tolerance tests were performed on all candidates for the "negative control" group and on all persons screening negative at one of the hospitals from December 12, 1956, through April 19, 1957. Of the 489 women so screened, eight or 1.6 per cent were found to have an abnormal glucose tolerance test. Of 191 women who had a normal glucose tolerance test in the first trimester, three or 1.6 per cent were abnormal on repeat test in the second trimester. Of 1,781 women normal in the first and/or second trimester, 147 or 8.3 per cent had become abnormal in the third trimester.

At present there are 208 in the "insulin treated" group and 212 in the "positive control" group. In addition, 209 women with normal glucose tolerance tests have been randomly selected as "negative controls."

Table 1 shows the outcome of first study pregnancy by study category. Many of the research patients already have given birth to three or four children, but this table presents only the analysis of outcome of first pregnancy under our observation. Of 184 "negative control" mothers who have delivered, 22.3 per cent had infants with one or more abnormalities. Of the 181 mothers with abnormal carbohydrate metabolism who were treated with insulin, 20.4 per cent had infants with

abnormal outcomes—very little if any difference from the normal mothers. Of 199 women with abnormal carbohydrate metabolism for whom no insulin was prescribed, there was a 32.7 per cent incidence of abnormal infants. In the distribution of abnormal outcomes the most striking differences occur with respect to children born live but weighing nine pounds or more at birth. Differences occur also in the figures of live births with congenital abnormalities and neonatal deaths.

The "positive controls," in contrast to the "insulin treated" group, received no special treatment for their abnormal carbohydrate metabolism. All groups were given the best possible prenatal care and were treated in the same manner during the period of confinement and delivery, except for purely obstetrical or medical indications outside of the abnormal carbohydrate condition.

The "positive control" group, therefore, have a significantly larger number of babies weighing nine pounds or more than the mothers in the "insulin treated" group; the congenital anomalies and neonatal deaths are more numerous in the "positive control" group, but the difference is not significant at the level of $P=0.95$. There is no significant difference between the number of fetal deaths in the two groups.

In all respects the outcome of pregnancy in the "insulin treated" group appears to be the same or very similar to that in the "negative control" group.

The average age and average degree of obesity or overweight in the "positive control" and the "insulin treated" groups are about the same. Yet, with insulin therapy, differences appear in the outcome of pregnancy in three respects, only one of which, at this time, is considered to be statistically significant.

There is less obesity in the "negative control" group and the average age is considerably lower than that for the abnormal groups, but even so the outcome of pregnancy in the "insulin treated" group is essentially the same, up to this time, as in the "negative control" group.

The study has not yet demonstrated a practical method for detecting abnormal carbohydrate metabolism in pregnancy. Our present screening criteria select as positive only 75 per cent of the women who have abnormal glucose tolerance tests, while the number of false-positives by our criteria approximate 40 per cent. A 60 per cent specificity rating for a screening program of this type would seem to be impractical for any large-scale program.

Two case histories, one "positive control" and one "insulin treated" case, are presented to show the complex picture of glucose tolerance tests in maternal prediabetes. Figure 1, "Case No. 151, a positive control," illustrates an abnormality of carbohydrate metabolism during one trimester of pregnancy, with normal tests being found in early trimesters, as well as between pregnancies. It is hoped that the long-range study aspects of this project will reveal what significance should be attached to this transitory hyperglycemia during the period of gestation.

Figure 2, "Case No. 76, insulin treated," illustrates one of the many complicated carbohydrate metabolism patterns in this project. In contrast to Figure 1 the details of Figure 2 merit an explanation. Mrs. M. O. was seen for the first time in the 23rd week of her seventh pregnancy when her screening test showed an elevation in blood sugar. There was no history of diabetes in her family or in that of her husband, but in 1936 she had a baby weighing nine pounds, 12 ounces; in 1938 her second child weighed ten pounds, eight ounces; and in 1943 a three-pound premature baby was born. Following this suspicious history her next three pregnancies were supposedly normal in all

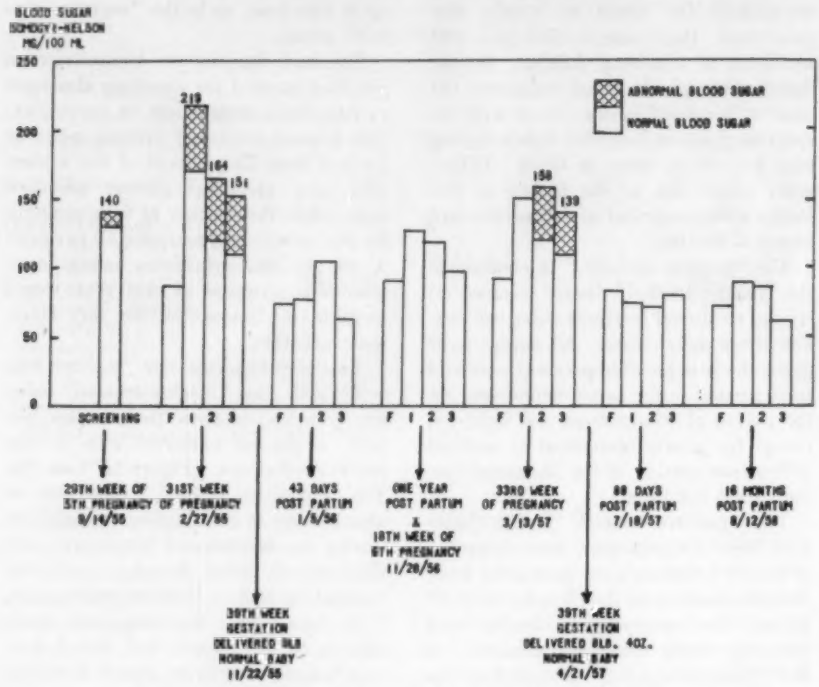

Figure 1—Case History of a "Positive Control" Study Subject

(Case No. 151, C. M., positive control, born 10/14/15, no known family history of diabetes, height: 61 inches, usual weight 110 pounds—past pregnancy history: 1943—excessive weight gain, baby lived only a few hours; 1944—gave birth to six-pound normal baby; 1947—excessive weight gain, baby's weight unknown; 1952—gave birth to six-pound normal baby.)

respects. Her glucose tolerance test in the 24th week of the seventh pregnancy had only one abnormal level, that at three hours, and therefore she was not classified as an abnormal case at that time. However, in the 30th week of pregnancy her tolerance test had worsened and she had abnormal levels at two and three hours after glucose. In the 31st week of pregnancy treatment with 15 units of NPH insulin was begun and continued daily throughout the remainder of the gestation period. In the 42nd week of pregnancy she delivered a normal baby weighing eight pounds, nine ounces. At 44 days postpartum her glucose tolerance test was perfectly normal. One year after the birth of this seventh baby and in the fourth week of her eighth pregnancy she had a tolerance test elevated at the one- and two-hour levels after glucose. She did not keep appointments between the 4th and 16th week and therefore was given another glucose tolerance test when she came in the 16th week of her

pregnancy. It should be noted that all research cases receive glucose tolerance tests in each trimester of pregnancy unless they are on insulin therapy. This case was not yet on insulin therapy in her eighth pregnancy. Insulin was begun in the 17th week of this second pregnancy under our observation and she received dosages of NPH insulin ranging from 15 to 20 units daily for the rest of her pregnancy. She delivered a full-term seven-pound, eight-ounce normal baby; 45 days after delivery her glucose tolerance test was still slightly abnormal, the second and third hours after glucose being elevated. Seven months after delivery of her second baby in our study, she was distinctly abnormal at the second hour after glucose, and in her one-year follow-up the glucose tolerance test finally had become normal by our criteria. The question is whether her blood sugars will remain normal. Only long-term follow-up and careful observation will reveal whether insulin had any preventive effect in this particular case.

We have presented a report of the premises, procedures, and preliminary results in a continuing study of maternal prediabetes and outcome of pregnancy. It is hoped that ultimately the study will clarify some of the confusing findings observed in the so-called state of "maternal prediabetes" and point the way to opportunities for prevention.

ACKNOWLEDGMENTS—All members of the Chronic Disease Program, Diabetes Field Research and Training, and the Prenatal Metabolism Research Staff have rendered valuable

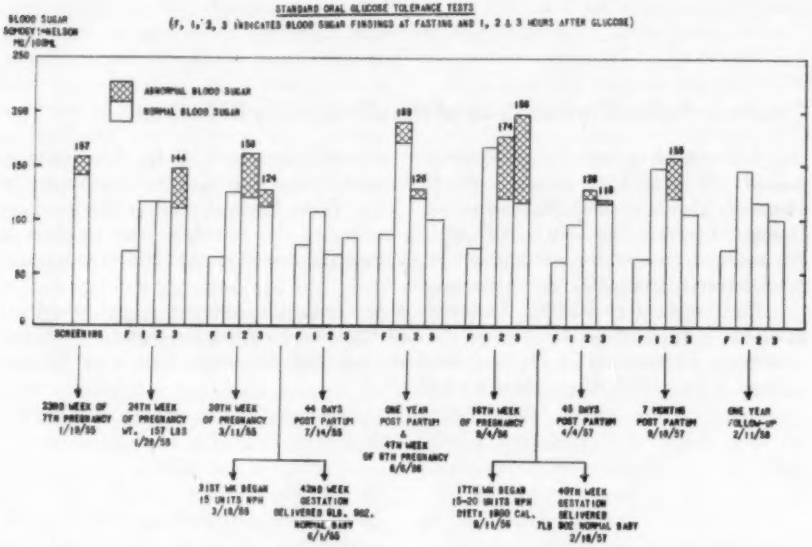

Figure 2—Case History of an "Insulin Treated" Study Subject

(Case No. 76, M. O., insulin treated, born 5/27/20, no known family history of diabetes, height 64 inches, usual weight 157 pounds. Past pregnancy history: 1936—nine pound, two-ounce baby; 1938—ten-pound, eight-ounce baby; 1943—three-pound premature baby; 1944—seven-pound, nine-ounce baby; 1952—seven-pound, 12-ounce baby; 1953—eight-pound, ten-ounce baby.)

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Course in Rehabilitation Care of the Chronically Ill Patient

A one-week course for physicians on rehabilitation care of the chronically ill patient will be held November 16-20, 1959, under the auspices of the Department of Physical Medicine and Rehabilitation, New York Medical College-Metropolitan Hospital Center. The course will offer a review of the principles and technics in the medical care of the chronically ill to meet the needs of the clinician, medical administrator, and public health physician.

The tuition fee is $100. Traineeships for tuition, maintenance, and travel are available. Applications for the course and traineeships from Dr. Jerome S. Tobis, Chairman, Department of Physical Medicine and Rehabilitation, New York Medical College, 1 East 105th Street, New York 29, N. Y.

The evolution of a dental epidemiology has been proceeding apace. The author reviews the classic contributions in this process and offers the belief that the original interests of dental epidemiology will enter into the general pattern of epidemiologic effort toward the improvement of health.

DENTAL PROBLEMS IN AN EPIDEMIOLOGIC PERSPECTIVE

John E. Gordon, Ph.D., M.D., F.A.P.H.A.

THE CHRONIC NATURE of dental disorders accounts in large measure for a delayed interest by the dental profession in epidemiological matters. For years epidemiology meant acute disease and mainly acute infection in massed aggregations of cases: epidemics that were common, sometimes overwhelming, and occasionally world-wide. These events were primarily within the domain of medicine and of veterinary science. The acute conditions in dentistry are mainly exacerbations of chronic processes. Dentistry has no outstanding epidemics.

Eventually epidemiologists recognized the necessity of extending their interests to the ordinary endemic behavior of disease, if the rise and fall of epidemics was to be understood. Furthermore, such outstanding infectious diseases as tuberculosis, leprosy, and syphilis are essentially endemic in behavior, yet rank high among causes of morbidity and mortality. First concerned with the infections, this emphasis soon came to include traumatic injuries, particularly those associated with accidents. Equally acute in origin, they occur more sporadically and endemically than in recognized outbreaks.

In the course of time communicable diseases came forcefully under control, to a satisfying extent in the Western World and with material progress almost everywhere. Public health naturally enlarged its activities to include the chronic and usually noninfectious processes which became the major causes of death in general populations. This shift was reflected in the organization of official health agencies; the time-honored division for the control of communicable diseases progressively became the division of disease control or the division of preventable diseases. A place was made for a division of dental health.

These changes brought a newer epidemiology, the epidemiology of chronic disease. The need for this diagnostic discipline to guide operational programs for prevention and control was as great for these diseases as for the infections. The chronic conditions that characterize dental pathology now fitted into the scheme of things; a dental epidemiology was a necessary part of a developing public health dentistry.

In retrospect, much of the responsibility for a delayed concern by dentists in the mass behavior of disease rests with epidemiology itself. As soon as epidemiology recognized the reasonableness and the need to incorporate chronic

disease within its scope of interests and sought methods and technics applicable to these conditions, dentistry accepted its obligation and its opportunity.[1] My purpose is to recount some of the accomplishments within the relatively short history of dental epidemiology, to indicate the general direction of present-day activities, and especially to place a dental epidemiology within the perspective of a broad approach toward an understanding of chronic disease processes in general.

Dental disorders provide admirable material for study of chronic pathological conditions. Some diseases progress slowly and gradually to full development, with leprosy an example from specific infections and caries equally illustrative for dentistry. Other chronic illnesses are characterized by alternating activity and quiescence, and rheumatoid arthritis finds its counterpart in root caries of old age. The main attribute of a third group is latency between initiation of the process and appearance of clinical manifestations; periodontal disease and cancer of the cervix stand in illustration.

Dental conditions have numerous advantages as models for investigation of chronic disease. The lesions are in the mouth and readily observable, making for direct clinical diagnosis in contrast to indirect measurements where changes are remote or deep-seated. Roentgenographic examination likewise is through direct application to the structures involved, thus avoiding the frequent indefiniteness because of interposed tissues and organs.

In terms of its brief existence the accomplishments of dental epidemiology are impressive. The investigations on mottled enamel or dental fluorosis in the western United States justifiably rank among epidemiologic classics, along with those of Panum on measles, Snow on cholera, and Goldberger on pellagra. The pattern of modern technical method so admirably employed in yellow fever and other mass diseases is duplicated in dental caries. A third use of epidemiology, the evaluation of proposed control measures, is exemplified in the Newburgh-Kingston tests on the efficiency of fluoride additives. Furthermore, dental epidemiologists have shown complete willingness to follow the advice of "Alice in Wonderland" that it is always well to begin at the beginning; Sognnaes[2] some twenty-three centuries later studied the prevalence of dental caries in the same island of Thasos where Hippocrates investigated mumps in 400 B. C., an event that just about marks the first epidemiology. Some of these accomplishments warrant greater attention.

Epidemiologic Classic

The problem originated in the observations of a clinician. That is usual. Karl Meyer once remarked that no disease is seen in the mass that is not seen in the individual patient, which was his wry way of saying that sound understanding of clinical behavior is the foundation for epidemiological analysis of any disease. That principle is the main support for my belief that dentists have the chief responsibility in a developing dental epidemiology.

At any rate, McKay, a practicing dentist, satisfied himself that children in Colorado Springs, Colo., had in common a dental anomaly not present in many of the neighboring communities. He enlisted the aid of a prominent dental pathologist of the day, Black of Chicago. Together in 1916 they[3] described as mottled enamel a unique condition presenting a grayish, splotchy appearance of the teeth, often with a peculiar brown staining. The disorder was present in 80 per cent of children and young adults born in the community and residing there continuously. Persons moving into Colorado Springs from outside were not affected unless they came in infancy and

never if tooth calcification was complete. Such mass occurrence of a dental condition in communities of considerable population was most uncommon; the spotty geographical distribution suggested an environmental origin. Water was early suspected, but ordinary analyses showed nothing.

Further field studies strengthened the evidence for water. The condition was confined principally to the Pike's Peak watershed; communities with other water supplies did not have it; it was associated mainly with deep wells. The people of Britton, S. D., and Oakley, Idaho, never had had mottled enamel; in both towns the water supply was changed to a deep well source and the disorder appeared. Observations in Bauxite, Ark., were of the same order, but with the particular significance that they led to intensive chemical examination of the water. Churchill[4] in 1931 established small quantities of fluorine as the etiologic agent. That element was present in waters supplied to communities with the disease; it was essentially absent in those without the condition. At about the same time Smith[5] and her associates published independent studies from Arizona with much the same results and including notable animal experiments. The disorder came to be known as dental fluorosis. Further field studies in numerous parts of the United States made quantitation possible. The greater the amount of fluorine in drinking water, the greater was the frequency of dental fluorosis. Waters with 1 part per million or less did not give rise to demonstrable lesions.

Engaged in developing a concept of chronic disease epidemiology, Hawkins and Gordon[6] in 1940 recognized these studies as epidemiologic classics. They fitted admirably with other examples of field study of noninfectious processes, from scurvy to pellagra, from endemic goiter to cancer and mental disorders. Among chronic noninfectious diseases, they reasonably share eminence with Goldberger's investigations of pellagra. That review of the epidemiology of mottled enamel was probably the first time that epidemiologists looked thoroughly at dental problems.

Modern Methodical Field Investigation

The long series of studies on yellow fever by members of the Rockefeller Foundation is probably unexcelled as an example of organized field and laboratory effort by a single institution toward the solution of a mass disease. A more general effort has led to equal accomplishments in malaria, in poliomyelitis, in the arthropod-borne encephalitides, and many others. The relationship of fluorine to dental caries, demonstrated under the leadership of the Public Health Service, ranks with any of those listed as an illustration of modern concerted field study of disease.

As always, interest centers on whence came the lead. Shortly after 1930, young Trendley Dean had become associated with mottled enamel studies. With McKay[7] he made a follow-up survey of mottled enamel in Bauxite, Ark., ten years after the change in water supply. Mottled enamel was demonstrated under control, but there also developed an impression that there was a lesser frequency of caries in fluorosed teeth than in those normally calcified since the new water was introduced, again an illustration of the clinical origin of most epidemiological inferences. This lead was exploited in his South Dakota studies[8] of 1938. The prevalence of dental caries was sharply less in persons with dental fluorosis than in those without the disorder. Furthermore, the presence of dental fluorosis in children was not essential to relative freedom from dental caries. It occurred whether or not their teeth showed macroscopic evidence of mottled enamel and in deciduous as well as in permanent teeth. The

suggestion was of a protective action of fluorine in low concentrations.

The next step was to test this hypothesis by comparing a community having a low fluorine content of the public water supply with one having essentially no fluorine. The children of Galesburg, Ill., using a water containing 1.8 ppm of fluorine had less than a third of the dental caries observed in children of comparable ages in nearby Quincy, Ill., where the water from the Mississippi River was practically free from fluorine.[9] The concentration of fluorine in Galesburg was sufficient to give some dental fluorosis. The rates for dental caries were essentially the same for those with and without mottled enamel, a matter of primary epidemiological importance. Thus came clinching proof of the efficacy of small amounts of fluorine in preventing caries.

The optimal effective concentration of fluorine next was sought through observations in 21 cities,[10] where water supplies had varying amounts of fluorine. Briefly, protective action regularly could be expected at levels of 1 ppm, an amount less than that associated with dental fluorosis. Generalization was thereby accomplished and public health application became a possibility.

Several accessory issues had still to be met. Questions of chronic[11,12] and acute[13] intoxication from use of fluoridated waters over long periods were settled in the negative. The beneficial effects evidenced by children were shown to be carried into adult life.[14] Eventually came field tests to determine the practicability and efficiency of adding fluorides to waters deficient in that element and to assure that fluorides of themselves were the significant factor. The results of controlled observations in Newburgh and Kingston, N. Y.,[15] in Grand Rapids, Mich., and in Hamilton, Ont., Canada, effectively demonstrated a new public health method of significant value.

Uses of the Epidemiologic Method

With the purpose now of examining the current direction of dental effort in epidemiology, and to judge its inclusiveness, I shall take various uses of the epidemiologic method in order. The studies just cited provide good examples.

The elementary function of epidemiology is to determine the frequency and distributions of mass disease, thus providing the needed information for organization, guidance, and evaluation of public health programs. The gross values for a total population are refined by examination of such fractions of the group as are determined by age, occupation, social status, geographical location, and numerous other factors. These are the time-place-person relationships of population pathology,[16] the descriptive epidemiology that identifies the size and nature of the problem. It is for this reason that epidemiology is designated the diagnostic discipline of public health.[17] The studies of caries and of dental fluorosis are replete with examples. So far as time relationships are concerned, dental medicine has made principal use of prevalence, the simpler cross-section endeavor. Only in recent years has the usefulness of incidence been appreciated, with increments of cases of dental caries emphasized by Russell[18] and his recognition that long-continued observations of populations are requisite to the study of periodontal disease. Determinations of prevalence in series to measure the effect of an altered environment and fluorine in water served adequately in dental fluorosis; this is the before-and-after approach. They scarcely suffice in a progressively developing condition like periodontal disease where suspicion rests on no precise factor to be introduced or withdrawn.

A second use of field method is a different sort of operation. The aim is no longer to determine the natural

history of disease but to obtain an answer to a specific question about an isolated variable or combination of variables. The lead is often from the observations of descriptive epidemiology as it was in dental caries. The objective is a search for cause, not necessarily a specific causative agent but some part of the complex acting in mass disease. The investigation is a planned experiment according to a prescribed design with adequate controls and tested means for measurement of differences. Again, the caries studies are an example in dental epidemiology. From such endeavor comes the enlargement of control measures; the research of today is the practice of tomorrow.

A third broad use of the epidemiologic method is in evaluation of agents or of methods for disease control, the field trial, as much a scientific procedure as the search for causative factors just described. Usually it is a test under operational conditions of a variable identified as pertinent through specific investigation. The evidence strongly favored low concentrations of fluorine in water in the prevention of dental caries. The proof of usefulness required the field trial of the Newburgh-Kingston studies,[15] a planned and controlled investigation carried to a significant end point. The evaluation of practices or procedures long in vogue, often originally accepted on scanty evidence, or because of a forceful advocate, or just that it was a good idea, are not subjected to periodic field evaluation to the extent they should be in dental or in general medicine. The premarital serologic test for syphilis is an example, used for many years before it was subjected to the necessary scrutiny with the resulting demonstration that it was of no practical value. Also, environmental or host changes may make a once productive control measure valueless, as the long isolation once practiced in scarlet fever. These methods of epidemiologic evaluation are applicable to clinical[19] as well as to mass procedures.

All three broad uses of the epidemiologic method have found application in dental medicine. If shortcomings are sought, they may rest in the restriction of interest by dental epidemiologists to primarily oral pathology, as if diphtheria were viewed as a faucial lesion to the neglect of its systemic manifestations. Periodontal disease presumably will profit from the current consideration of the total host. Investigation of chronic local disease of the mouth also conceivably has possibilities for defining the principles governing such processes generally.

Ecologic Principles and Dental Epidemiology

Prominent among features of a developing epidemiology of chronic disease are a greater reliance on ecologic principles[20] in interpreting disease behavior, increased recognition of social factors[21] in the complex of causality, and more need of statistical procedures in analysis of observations.[22] Expectedly and desirably, a dental epidemiology will evolve within dental concepts and yet it is epidemiology to the extent that it builds on the fundamentals of that discipline. Some of these considerations are examined to advantage.

The location of dental lesions leads to ready detection and clinical methods permit an accuracy in identification beyond that of most chronic disorders, for instance mental illness[21] or coronary heart disease.[23] Degree of severity, the end point reached in the individual case within the total potentiality of the disease, has equal significance with the numbers affected in measuring impact on a population. Together the two values constitute what has been termed the biologic gradient of disease.[24] A further consideration is that methods of the clinic, often because of their com-

plicated nature, are not regularly transferable to the field. Dental epidemiology has done well in meeting these demands of classification and technical method applicable to field conditions.

The decayed-missing-filled (DMF) scheme so widely used in dental caries has no superior among field methods for chronic disease. General epidemiology may take some satisfaction in that the technic appears to have originated with Selwyn Collins,[25] to be enlarged and perfected by Klein[26] and other investigators. The scheme for classifying and scoring lesions of periodontal disease by Russell[27] is beginning to serve usefully in prevalence surveys of that condition.

Epidemiology may be said to have reached its modern development when the laboratory became an integral part of field investigation of disease, a concept so firmly entrenched that in our recent studies of acute intestinal disease in the arctic, a laboratory was part of the equipment that went with us inside the arctic circle. Dental epidemiology found the laboratory a critical necessity in field investigation of dental fluorosis, and it was a controlling factor in studies of dental caries. With full appreciation that the house-to-house approach to people and their environment is the basis of field study, the impression nevertheless prevails that workers in dental epidemiology have failed to exploit fully the usefulness of laboratory procedures. The epidemiologist of today cannot practice his profession without that aid any more than can the clinician.

Despite the activity of the basic sciences in dental disease, particularly through enzymology, physiology, biochemistry, and nutrition, few have extended their research to the field in the manner of the modern microbiologist in infectious processes. Notable exceptions include the fascinating epidemiological turn to which Witkop[28] has directed his studies on genetics and inherited dental anomalies. The lack is by no means restricted to dental medicine. Medical progress rests on research from three sources: the bedside, the laboratory, and the field. No one is all sufficient; emphasis shifts as knowledge advances and a combination of effort speeds results. Dental investigation might profit from more of this.

The contribution of social factors to the pattern of causality in chronic disease is just being appreciated in dental epidemiology, one of the few contributions being that of Russell[29] in periodontal disease. From the viewpoint of practical prevention, the knowledge of fluorine effect in dental caries marked progress; the demonstration of its efficiency in a general population demonstrated its public health usefulness; but dental epidemiologists will not have met their obligations to operational public health until they determine why certain communities will not accept this demonstrated procedure, thereby gaining the facts by which to influence that action.

The studies of Massler and associates[30,31] on relative frequency of caries and periodontal disease in selected populations are enlarging an epidemiologic concept that attracts increasing attention, that of synergism and antagonism in mass disease of man.[32] Tuberculosis is surely not the same disease in a malarious population as in a community free from that condition and a similar example is the association of shigellosis and kwashiorkor. That the presence of one disease influences the potentialities of a second becomes increasingly apparent; the reaction is sometimes favorable and sometimes unfavorable. Few diseases are provided with a virgin host; this consideration of present and past experience in other pathological processes adds to the growing number of host factors increasingly recognized as significant in the genesis of chronic disease. These matters[33] have had minimal concern in dental population pathology.

Nutrition ranks high among activities in dental public health, to some extent allied to the concept just presented, but more in relation to dental health as contrasted to dental disease. The long-concern of child dentistry, and the more recent emphasis on a general preventive dentistry,[34] suggests the usefulness of an epidemiology of health[35] in furthering these interests, in contrast to an epidemiology of disease, an idea that has taken root in medicine, although admittedly not yet much advanced beyond the conceptual stage.

Dental epidemiology clearly is developing along ecological lines, incorporating in its field operations the principles and many of the niceties of established epidemiologic technics. Multifactorial causation of mass disease begins to have acceptance in dental thought and is evidenced in its epidemiologic investigations. A deficiency in fluorine is one of the factors in the origin of dental caries, yet with full appreciation that others are to be found in the constitution of host populations and in the environment, physical, biologic, and social to which they are subject. Some fields of interest in dental medicine and particularly those which make oral disease a part of general medicine now have attention.

Current Direction of Dental Epidemiology

Dental workers are in common agreement that periodontal disease is the epidemiologic problem of the immediate future and for sometime to come. A variety of sciences have been turned to this baffling disorder, and effort at the moment is active. Only in recent years have epidemiologic methods been put to use. A review by Belting[36] summarizes the present situation, with general agreement that the condition commonly has an onset at the time of puberty with maximum prevalence in middle life. Russell[37] and his associates have compared a comprehensive series of urban dwellers with a lesser but adequate number of rural residents[38] to show that rural life of itself is no factor conducive to periodontal disease; observed differences are dependent more on social and economic differences.[39] Observations on gingivitis in an English institution[39] for children aged two to 17 years indicated over five years that prevalence and severity reached a peak for boys at 13 years and somewhat earlier for girls. Seasonal incidence was lowest in late summer and autumn. Such investigations are serving to define the mass problem, but there is no discounting Russell's[18] expressed opinion that long-time incidence studies with a fixed population are necessary in the search for cause. Likewise, examination of host and environment in the search for causative factors presumably will bring into play the resources of general medicine to a greater extent than have most dental field studies to date.

Malocclusion in its mass relationships is the kind of epidemiologic investigation that appeals to the general epidemiologist. As has been suggested for periodontal disease, causation presumably rests rather broadly in host and in environment, with nutrition an attractive environmental element. Means have been taken to develop adequate field methods of measurement.[40] Epidemiologic interest has not been great, but the inclusion of that subject in the present program is encouraging.

The mouth and its adjacent structures seemingly should provide exceptional opportunity for the investigation of congenital anomalies for reasons already presented. An original concern with genetic origin, and directed toward dentinogenesis imperfecta,[41] has been enlarged by Witkop[28,42] through field studies in a triracial population of southern Maryland to produce results fascinating to the general biologist. The epi-

demiologic studies of Ingalls[43] have firmly set the pattern, however, that a material proportion of congenital disorders are acquired by the impact of environmental factors in the course of gestation. His observations have included cleft palate, but this approach has had little or no application to the material provided by strictly dental lesions.

The war experience of the past decade firmly established an epidemiology of trauma through application of ecologic methods of analysis to cold injury.[44] Subsequently these general methods were applied to trauma of accidental origin[45] in many fields. Teeth are destroyed by trauma and adjacent structures commonly suffer injury. The field is largely unexplored in its dental relationships.

With the future of dental epidemiology inevitably drawn into problems of general medicine as a means to answer its own questions, the expectation is that mass relationships of neoplasms and of radiation injury will enter into dental considerations, if for no other reason than the nature of oral structures provides such favorable opportunity.

Summary

The dentist and the pediatrician were among the earliest to recognize that prevention is an innate feature of clinical practice along with medical care. The evolution of a public health dentistry was in logical sequence. That endeavor is believed inhibited in attaining its potential by inadequate resources in official health agencies for epidemiologic diagnosis and the guidance and evaluation of programs that comes from these methods. The need is as great as for other major activities in state and local health departments.

The record of research by dental epidemiologists speaks for itself. The deficiency is that there are too few in the field.

The remedy to both situations presumably rests with dental education. It is desirable that undergraduate instruction in preventive dentistry be built around a framework of epidemiology, as is the trend in medical education. The time is judged at hand when dental medicine through graduate instruction must take responsibility for developing its own epidemiologists. A start has been made by some few schools.

In the course of its development dental epidemiology placed initial emphasis on problems primarily dental. The future would indicate an eventual incorporation of those interests into the general pattern of medical and epidemiologic effort toward the health and welfare of populations.

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This study of antibodies against a variety of enteric pathogens, including salmonella, shigellae, and enteropathogenic Escherichia coli in human gamma globulin has possible implications especially for the clinical use of human gamma globulin.

STUDY ON ANTIBODIES AGAINST ENTERIC PATHOGENS IN HUMAN GAMMA GLOBULIN

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IT HAS BEEN known for several years that not all serum antibodies are contained in the human gamma globulin fraction II of Cohn. Notably, only a small portion of agglutinins against the somatic antigen of Salmonella typhosa is present in this fraction (Enders).[1] Since studies carried out in several laboratories have revealed that the bacterial hemagglutination test is a sensitive method for the demonstration of antibodies against the somatic (O) enterobacterial antigens, it was deemed of interest to investigate by this procedure the titers in commercial human gamma globulin of antibodies against the O antigens of various enteric pathogens, including salmonellae, shigellae, and enteropathogenic Escherichia coli.

Recently, it has been shown that human cord serum may contain incomplete antibodies (for definition see discussion) against somatic antigens of enteric pathogens.[2] This finding has been obtained by means of antiglobulin hemagglutination test (modified Coombs test). Such incomplete antibodies could not be demonstrated in the corresponding maternal serum specimens. These findings suggest that when serum of adults contains complete antibodies against these microorganisms, it may also contain incomplete antibodies undemonstrable because their titers do not exceed those of the former. Furthermore, analogous to complete and incomplete Rh antibodies, the incomplete bacterial antibodies may well pass the placental barrier more readily than the complete antibodies.

Since commercial human gamma globulin does not contain all complete antibodies against the somatic antigens of enteric pathogens, the possibility that incomplete antibodies could be demonstrated led to a search for them by two hemagglutination procedures. Furthermore, human gamma globulin preparations obtained from donors living in various parts of the world were studied to determine differences in titers of complete and incomplete antibodies that may reflect differences in the incidence of enterobacterial infections.

Materials and Methods

Several lots of commercial human gamma globulin prepared in the United States were used. In addition, human gamma globulin prepared in England was obtained through the courtesy of Dr. Joan Taylor, London; gamma globulin from India through the kindness of

Dr. P. R. Dutt, New Delhi; Japanese gamma globulin prepared from placentas imported from Japan through the cooperation of Dr. I. S. Danielson, Lederle Laboratories, Pearl River, N. Y., and Australian gamma globulin obtained from blood collected from many parts of Australia through the courtesy of Dr. R. W. Greville, Parkville. Several human gamma globulin subfractions were made available through the courtesy of Dr. R. B. Pennell, Protein Foundation, Inc., Jamaica Plain, Mass.

Strains of enteric pathogens isolated in our laboratories were employed as well as numerous cultures kindly supplied by Dr. William H. Ewing, Communicable Disease Center, Chamblee, Ga., and by Dr. J. W. Winter, Beth Israel Hospital, New York, N. Y.

The microorganisms were grown in Kolle flasks on brain veal agar for 18 hours at 37° C. The growth of each was suspended in 25 ml of phosphate hemagglutination buffer (Difco) (pH 7.3). The suspension was then heated in a waterbath at 100° C for one hour. The supernates, obtained by centrifugation in a refrigerated centrifuge, were employed as antigens in the hemagglutination tests.

The enterobacterial hemagglutination test as used in these laboratories has been described in detail previously.[3,4] Briefly, erythrocytes (2.5 per cent suspension) of individuals belonging to blood group O were washed in buffer three times; the antigen (dilution 1:10) was added to the centrifuged sediment to give a 2.5 per cent red blood cell suspension. The suspension was then incubated in a waterbath at 37° C for 30 minutes and washed three times. These modified (antigen treated) red blood cells (volume 0.2 ml) were added to gamma globulin in serial dilutions (0.2 ml) and buffer for control purposes. The mixtures were incubated in a waterbath at 37° C for 30 minutes. The resulting hemagglutination was read grossly after centrifugation for one minute at approximately 300 G.

For the demonstration of incomplete antibodies red blood cells were combined first with the antigen, as described above, washed three times, and then treated with one of several proteolytic enzymes. The enzymes studied were as follows: Trypsin (Difco Laboratories); chymotrypsin (Worthington Biochemical Corporation); protease (of pancreatic origin), ficin (fig tree latex), papain (papaya); the latter three preparations were purchased from Nutritional Biochemical Corporation. Stock solutions containing 1,000 μg/ml of enzyme in buffer were kept frozen until used. After treatment of the modified red blood cells in one or the other enzyme (concentrations 250 to 1,000 μg/ml) the suspensions were washed three times and then used in the hemagglutination test as described above. The antiglobulin hemagglutination procedure has been described previously.[2] Incomplete antibodies were considered to be present if the titer of the gamma globulin obtained with enzyme-treated erythrocytes was at least four times that obtained in the hemagglutination test. The Coombs test was considered positive if the addition of antihuman gamma globulin to erythrocytes that had failed to react in the hemagglutination test yielded agglutination, or if the Coombs serum markedly enhanced agglutination.

Bacterial agglutination tests were performed by mixing gamma globulin in serial dilutions (0.25 ml) with a heated suspension of the microorganisms (0.25 ml). The mixtures were kept in a waterbath at 50° C for 18 hours, and the agglutination was read grossly before and after centrifugation for five minutes at 300 G.

Results

In the first series of experiments the sensitivity of three methods for the

Table 1—Detection of Enterobacterial Antibodies in Human Gamma Globulin by Agglutination and Hemagglutination Methods

Human Gamma Globulin Dilutions	Shigella dysenteriae type 1			Shigella flexneri type 3			Shigella boydii type 1			Shigella sonnei			Salmonella cholerae-suis		
	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
1:10	–	2	4	1	1	3	2	4	4	3	4	4	1	3	4
1:20	–	1	3	–	–	3	–	3	4	2	4	4	–	2	4
1:40	–	–	2	–	–	3	–	3	4	–	4	4	–	2	4
1:80	–	–	1	–	–	2	–	2	3	–	3	4	–	–	3
1:160	–	–	–	–	–	1	–	2	3	–	3	4	–	–	2
1:320	–	–	–	–	–	1	–	1	2	–	2	4	–	–	1
1:640	–	–	–	–	–	–	–	–	2	–	1	2	–	–	–
1:1,280	–	–	–	–	–	–	–	–	1	–	–	2	–	–	–
1:2,560	–	–	–	–	–	–	–	–	1	–	–	1	–	–	–
1:5,120	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

a=bacterial agglutination
b=bacterial hemagglutination
c=bacterial protease hemagglutination
–=no agglutination
1 to 4=various degrees of agglutination

demonstration in human gamma globulin (USA) of antibodies against the somatic (O) antigens of enteric pathogens was compared, namely, the conventional bacterial agglutination test, the hemagglutination procedure, and the enzyme hemagglutination test. The last method was used to detect incomplete antibodies; similar to the procedure used for the detection of incomplete Rh antibodies it employs red blood cells treated with proteolytic enzymes. The results of this experiment are summarized in Table 1.

It may be seen from this table that the hemagglutination and protease hemagglutination tests were considerably more sensitive than the conventional agglutination method for the detection of antibodies against several types of shigellae and a representative of the salmonella group. It should be emphasized that a fixed quantitative relationship between the titers of antibodies against these microorganisms could not be demonstrated by the three procedures. Incomplete antibodies were demonstrated in titers ranging from 1:80 to 1:2,560 by means of the protease hemagglutination method. Noteworthy is the observation that the titers of antibodies against S. dysenteriae Type 1 was considerably lower than the titers of the other antibodies, possibly because of the virtual absence of Shiga infections in this country.

The above suggestion of the presence in gamma globulin of incomplete antibodies in relatively large quantities would be strengthened, were it possible to detect increased titers of such antibodies also by an antiglobulin (Coombs) procedure. The results of a series of titrations of antibodies in human gamma globulin against the somatic antigens of enteric pathogens are presented in Table 2.

Table 2 shows that the titers of antibodies against a large number of enteric pathogens is fourfold (range 2 to 8) higher by the antiglobulin technic than by the hemagglutination method. It may be concluded, therefore, that incomplete antibodies against various salmonellae,

Table 2—Complete and Incomplete Enterobacterial Antibodies in Gamma Globulin

Enterobacterial Antigens	Titers (reciprocal)	
	Hemagglutination Test	Antiglobulin Hemagglutination Test
Salmonella polyvalent	80	320
Shigella polyvalent	160	320
E. coli polyvalent	80	320
S. paratyphi A	40	160
S. typhimurium	80	320
S. cholerae-suis	320	1280
S. muenchen-oregon	80	320
S. enteriditis	80	320
S. anatum	80	320
Sh. dysenteriae (1)	40	160
Sh. dysenteriae (2)	160	640
Sh. flexneri (3)	80	160
Sh. flexneri (6)	40	160
Sh. boydii (1)	320	1280
Sh. boydii (4)	40	320
Sh. sonnei	40	160
E. coli 111	40	80
E. coli 055	40	160
E. coli 026	40	160
E. coli 127	..	80

shigellae, and serotypes of Escherichia coli are present in commercial human gamma globulin.

Next, a study on the presence of complete and incomplete salmonella antibodies in gamma globulin obtained from Japan and the United States as well as in a pool of 20 serum specimens from healthy American adults was carried out. The results are shown in Table 3.

Perusal of this table shows that the two gamma globulin samples contained both complete and incomplete salmonella antibodies in similar titers. It is also evident that only complete antibodies could be demonstrated in the serum specimen. Furthermore, it is seen that red blood cells treated with enzyme only, used for control purposes, were not agglutinated by either gamma globulin or serum. A few experiments carried out with gamma globulin obtained from Australia showed titers similar to those of USA gamma globulin.

A series of comparative experiments entailing the use of several enzymes, namely, trypsin, protease, papain, and ficin, were done to determine the anti-

Table 3—Complete and Incomplete Salmonella Antibodies in Gamma Globulin and Pooled Serum

Dilutions of Globulin and Serum	Globulin—USA				Globulin—Japan				Pooled Serum			
	A*		B		A		B		A		B	
	Hemagglutination**											
	a	b	b	c	a	b	b	c	a	b	b	c
1:20	3	x	–	–	3	x	–	–	4	x	–	–
1:40	1	3	–	–	2	3	–	–	3	x	–	–
1:80	–	3	–	–	–	3	–	–	2	–	–	–
1:160	–	2	–	–	–	2	–	–	1	–	–	–
1:320	–	2	–	–	–	2	–	–	–	–	–	–
1:640	–	1	–	–	–	1	–	–	–	–	–	–
1:1280	–	–	–	–	–	1	–	–	–	–	–	–
1:2560	–	–	–	–	–	–	–	–	–	–	–	–
0	–	–	–	–	–	–	–	–	–	–	–	–

*A=Salmonella groups A, C_2, D, and E_1 modified erythrocytes
B=control erythrocytes
**a=Hemagglutination
b=Coombs hemagglutination
c=Protease hemagglutination
–=No hemagglutination
1 to 4=Various degrees of hemagglutination
x=not done

Table 4—Agglutination by Human Gamma Globulin of Human Erythrocytes after Treatment with Proteolytic Enzymes and Enterobacterial Antigens

Enteric Pathogens	Erythrocytes: PR	T	PA	F	B	PR	T	PA	F	B	PR	T	PA	F	B	PR	T	PA	F	B
	Titers (Reciprocal) of Hemagglutinins in Gamma Globulin: USA					Japan					India					England				
Salmonella mixture*	400	200	200	800	200	200	200	200	200	100	1600	800	400	1600	200	200	200	200	400	200
Shigella mixture*						400	400	200	400	100	1600	800	400	400	200	200	200	200	200	200
E. coli mixture*	400	400	100	400	50	200	200	100	400	50	400	200	200	400	200	100	100	100	200	50
S. paratyphi A	400	400	200	400	<50	400	200	200	400	<50	400	200	200	200	100	200	200	100	200	<50
S. typhimurium	200	100	100	200	100	200	100	50	200	100	400	200	200	400	100	200	100	50	200	100
S. cholerae-suis	400	100	200	200	100	200	200	100	200	50	200	200	200	400	100					
Sh. boydii (1)	800	800	800	800	200	400	400	200	800	100	1600	800	800	1600	200					
Sh. flexneri (3)	100	100	100	100	<50	200	200	100	400	100	400	200	100	200	100					
Sh. dysenteriae (1)	200	50	200	100	<50	200	100	200	200	<50	400	400	400	200	200					
E. coli 055	400	200	200	400	100	400	200	200	200	50	200	200	200	400	200					
E. coli 0111	400	200	200	400	50	200	200	100	400	<50	400	200	200	200	50					
E. coli 0127	200	100	100	200	<50	200	100	100	200	<50	200	100	100	200	<50					

PR=Protease
T=Trypsin
PA=Papain
F=Ficin
B=Buffer
*=Polyvalent (see text)

body titers against the somatic antigens of a variety of enteric pathogens in gamma globulin obtained from the USA, Japan, and England. In these tests both complete and incomplete antibodies were studied. The results are summarized in Table 4.

The table shows that the titers of either complete or incomplete antibodies in the various gamma globulin preparations were of the same order of magnitude, although certain differences exist. Noteworthy is the fact that complete antibodies against S. paratyphi A and S. dysenteriae Type 1 (Shiga bacillus) were not found in the preparations from the United States and Japan, but such antibodies were present in the gamma globulin obtained from India. Incomplete antibodies were demonstrated in all gamma globulin preparations with enzyme treated erythrocytes, as the titers of antibodies against one or more pathogens were from four to more than eightfold higher than those obtained with control erythrocytes (buffer instead of proteolytic enzymes). It should be noted that the degree of enhancement of agglutination effected by various enzymes is not always identical.

The results of a representative experiment designed to determine whether either complete or incomplete enterobacterial antibodies were present in the subfractions of Cohn's fraction II are summarized in Table 5.

Perusal of the table reveals that fraction II 1, 2, 3 and subfraction II 3 contain both complete and incomplete antibodies against Salmonella anatum, while subfraction II 1, 2 contains incomplete antibodies. Additional experiments with a variety of crude and highly purified O antigens from various enteric pathogens revealed the presence of both complete and incomplete antibodies in all three fractions. Antibodies were detected when the three materials were used in concentrations of 125 to 1,000 μg/ml. The corresponding titers of gamma globulin were from 1:160 to 1:640. Based on the fact that commercial human gamma globulin contains 16.5 ($\pm$1.5) grams of this material per 100 ml dilutions of 1:160 to 1:640 corresponds to approximately 1,000 to 250 μg/ml. Therefore, the activity of the subfractions is strikingly similar to that of the commercial product.

In order to determine the degree of

specificity of the results obtained with the enterobacterial hemagglutination methods, absorption tests were carried out. Human gamma globulin was absorbed with various amounts of washed bacterial cells (S. cholerae-suis (Group C_1), S. muenchen-oregon (Group C_2), and S. sonnei). The mixtures were incubated at 37° C for 30 minutes and then centrifuged in a refrigerated centrifuge. These supernates and the unabsorbed material were then tested for antibodies against the three antigens by means of the enzyme hemagglutination test. The results are recorded in Table 6.

Table 6 shows that each of the antigens removed the major part of homologous antibodies, although a minor reduction in antibody titer was also effected by heterologous antigens. It has been observed by Arnon, Salzberger, and Olitzki (personal communication) that small amounts of enterobacterial antigen absorb only the homologous agglutinins, whereas larger amounts absorb heterologous (nonspecific) antibodies as well.

Discussion

The present investigation has revealed that human gamma globulin contains both complete and incomplete antibodies against the somatic antigens of a variety

Table 5—Salmonella Antibodies in Human Gamma Globulin and Subfractions

Gamma Globulin and Dilutions		Human erythrocytes treated with crude Salmonella anatum antigen followed by: Protease (1,000 μg/ml)	Trypsin (1,000 μg/ml)	Papain (1,000 μg/ml)	Ficin (1,000 μg/ml)	Buffer
		Hemagglutination				
Gamma globulin	1:20	4	4	4	4	4
	1:40	4	4	4	4	4
	1:80	3	4	3	4	2
	1:160	2	2	2	2	–
	1:320	1	1	1	1	–
	1:640	–	1	–	1	–
	1:1280	–	–	–	–	–
II 1, 2, 3 (μg/ml)	1000	3	3	3	3	2
	500	3	2	2	3	1
	250	2	2	1	2	–
	125	1	–	–	1	–
	62	–	–	–	–	–
II 1, 2 (μg/ml)	1000	2	2	2	2	–
	500	1	1	1	1	–
	250	1	1	–	1	–
	125	–	–	–	–	–
	62	–	–	–	–	–
II 3 (μg/ml)	1000	3	2	3	2	1
	500	2	1	2	1	–
	250	1	–	1	1	–
	125	–	–	–	–	–
	62	–	–	–	–	–

–=No hemagglutination 1 to 4=Various degrees of hemagglutination

Table 6—Absorption by Bacterial Cells of Enterobacterial Hemagglutinins in Human Gamma Globulin

Human Gamma Globulin		Hemagglutinin Titers (Reciprocal)		
		S. cholerae-suis (Group C_1)	S. muenchen-oregon (Group C_2)	S. sonnei
Unabsorbed		1280	640	1280
Absorbed with				
S. cholerae-suis	1:1	80	160	1280
	1:5	80	160	1280
	1:25	160	320	1280
S. muenchen-oregon	1:1	640	<40	640
	1:5	640	80	640
	1:25	1280	160	1280
S. sonnei	1:25	640	640	40
	1:125	640	320	160

of enteric pathogens. Incomplete antibodies were demonstrated by two methods, namely, the antiglobulin (Coombs) hemagglutination test and the enzyme hemagglutination procedure. It should be emphasized that the term incomplete antibody, as used in this communication, does not imply univalence of the antibody. Rather, the term has been employed in a descriptive sense, denoting agglutination in the above two methods in titers exceeding those of the reference hemagglutination method.

Nonagglutinating (incomplete) bacterial antibodies have been described previously. In 1946, Morgan and Schutze[5] reported on nonagglutinating incomplete antibodies in human antisera against Shiga and typhoid bacilli; these antibodies were detected by reaction between an antiglobulin (Coombs) serum and the sensitized bacterial cells. Incomplete antibodies against a variety of bacteria were demonstrated also by Wilson and Merrifield,[6] Ford and DeFalco,[7] Havlik and Potuznik,[8] and by Weil and Felsen.[9]

One of the major difficulties encountered in the definition of incomplete antibodies, in the absence of demonstrable physical and/or chemical differences between complete and incomplete antibody molecules themselves, involves distinguishing between enhanced agglutination by any one particular method due to increased sensitivity of the procedure and the unequivocal demonstration of incomplete antibodies as separate entities. This difficulty is clearly evident from the fact that incomplete Rh_0 (D) antibodies may agglutinate certain Rh-positive cells (lacking C and E antigens) in saline solution, whereas the same antibodies do not agglutinate other Rh_0-positive cells under these conditions. Furthermore, it has been shown recently that erythrocytes from certain cold blooded animal species, after modification with enterobacterial antigens, are not agglutinated by homologous complete bacterial antibodies; in contrast, the same antibodies effect agglutination of similarly treated red blood cells from warm blooded animal species.[10] Analysis of this observation revealed that trypsin treatment of red blood cells of the cold blooded animal species brings forth agglutination by the same complete antibodies. It appears that a protein on the surface of these erythrocytes, which can

be removed by trypsin, interferes with agglutination. It is obvious that failure of agglutination might have been ascribed erroneously to incomplete bacterial antibodies, had parallel experiments with red blood cells from warm blooded animal species been omitted.

The results of the present study have revealed that the titers of antibodies in human gamma globulin against somatic antigens of various enteric pathogens detected by bacterial agglutination tests is considerably lower than those obtained in hemagglutination, Coombs hemagglutination, and enzyme hemagglutination procedures. Several authors, including Sieburth,[11] Wentworth, Brock, Stulberg, and Page,[12] Feeley, Sword, Manclark, and Pickett,[13] Stulberg, Zuelzer, and Page,[14] Gaines and Landy,[15] and Neter, et al.,[4] have found the hemagglutination method more sensitive than the agglutination procedure. In contrast, McNaught[16] as well as Graber and Dodd[17] observed identical sensitivity. Additional experiments are required to explain these discrepancies.

The demonstration of both complete and incomplete antibodies against O antigens of enteric pathogens in commercial gamma globulin raises the question as to the possible therapeutic utilization of this plasma fraction. Since incomplete antibodies, such as Rh antibodies are capable of producing clinical illness (hemolytic disease), it is conceivable that incomplete bacterial antibodies also may exert antibacterial activity in vivo. Recently, it has been shown by Manning, et al.,[18] Fisher and Manning,[19,20] Millican, Rust, and Rosenthal,[21] Knouf,[22] Sonea, et al.,[23] among others, that human gamma globulin is protective in experimental infection of animals and enhances the therapeutic efficacy of antibiotics. Preliminary observations by Waisbren[24] and Ravina[25] suggest that gamma globulin may also be beneficial in the treatment of bacterial infections in human beings who do not suffer from hypogammaglobulinemia. Additional studies are required to determine the presence of incomplete O antibodies against other Gram-negative bacilli besides enteric pathogens by the methods used in this study. The possible relationship between the titers of complete and/or incomplete antibodies against various Gram-negative bacilli and the therapeutic efficacy of human gamma globulin in the corresponding infections remains to be determined. Striking differences in the efficacy of human gamma globulin in experimental infections of mice by various strains of bacteria were noted by Fisher and Manning.[19] Attention may be called also to the studies of Yeivin, Salzberger, and Olitzki[26] who showed that human sera may yield a higher percentage of positive results in bactericidal than in hemagglutination tests. Whether this difference can be explained by the presence of incomplete antibodies, not detected by the latter method, or is due to other factors is not clear at this time. That O antibodies against typhoid bacillus exert bactericidal effects has been shown recently again by Muschel, Chamberlin, and Osawa.[27]

Should complete and/or incomplete O antibodies against Gram-negative bacilli be effective in vivo as antibacterial agents, the question of their utilization in the local treatment of intestinal infections and of enteric carriers may be considered. In this connection attention should be called to the important observations of Freter[28] to the effect that oral administration of O antibodies protected guinea pigs against fatal enteric cholera, whereas intraperitoneal administration was not effective.

Although it had been expected that the titers of complete and/or incomplete antibodies in human gamma globulin obtained from various parts of the world may reflect differences in the incidence of specific enterobacterial infections, the present study did not furnish striking

evidence to this effect. In evaluating this type of investigation, the fact should be kept in mind that the elevated antibody (hemagglutination) titers resulting from acute salmonella and shigella infection in children usually disappear within several months after onset of the disease.[29]

Summary

A study of antibodies against a variety of enteric pathogens, including salmonella, shigellae, and enteropathogenic Escherichia coli in human gamma globulin revealed the following findings:

1. The hemagglutination test made possible the detection of complete antibodies against these pathogens in titers exceeding those obtained by the conventional bacterial agglutination method.

2. Incomplete antibodies were demonstrated by the antiglobulin hemagglutination and enzyme hemagglutination procedure, and the titers were up to 16-fold higher than those obtained by the hemagglutination method.

3. No striking differences in the titers of these antibodies were found in gamma globulin preparations obtained from the USA, Japan, India, England, and Australia, except that complete antibodies against S. paratyphosa A and S. dysenteriae Type 1 were found in preparations from India but not from the USA and Japan.

4. Absorption tests substantiated the specificity of the hemagglutination method.

5. Subfractions (II 1, 2 and II 3) of human gamma globulin contain both complete and incomplete enterobacterial antibodies.

6. The possible implications of the findings, with particular reference to the clinical use of human gamma globulin, are discussed.

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St. Louis Survey Follow-up

The Health and Welfare Council of Metropolitan St. Louis, 417 North 10th Street, St. Louis, Mo., through a special committee, has recently issued a 31-page pamphlet entitled "Hospital Planning in Metropolitan St. Louis," which analyzes the sections of the APHA St. Louis Survey on hospitals, nursing homes, and related facilities and institutions from the vantage point of a two-year follow-up period.

The APHA survey entitled "Public Health and Hospitals in the St. Louis Area—A Mid Century Appraisal," completed in 1957, was one of the most extensive studies undertaken by the Association. It was directed by Edward Press, M.D., director of field services of the APHA, together with Ira V. Hiscock, Sc.D., and Roscoe P. Kandle, M.D., as co-chairmen, with the aid of 24 consultants. An editorial on this survey appeared in the August, 1958, A.J.P.H. on page 1068. The survey is available from the Book Service, APHA, 1790 Broadway, New York 19, N. Y.; $4.50.

In studying the effectiveness of iodine as a disinfectant for swimming pools, the authors found it to be more effective than chlorine. Furthermore, iodine had no unpleasant side effects.

EFFECTIVENESS OF IODINE FOR THE DISINFECTION OF SWIMMING POOL WATER

A. P. Black; James B. Lackey; and Elsie Wattie Lackey

CHLORINE added either in the form of a gas or as one of the commercially available high test hypochlorites is unquestionably the most widely used agent for the disinfection of swimming pool water. In recent years bromine has been suggested for this purpose and equipment for its continuous feeding is commercially available, but to date it has found relatively little acceptance.

Chlorine, however, as a disinfecting agent for swimming pool water has certain disadvantages. When applied to water it first reacts with ammonia, ammonium compounds, and other nitrogenous compounds which may be present to form chloramines. When added in a concentration sufficient to destroy these compounds the process is termed "breakpoint" chlorination and any chlorine remaining after these compounds have been destroyed is called "free" chlorine residual. Chlorine present in water in the form of chloramines is called "combined" chlorine and measured residuals are termed "combined chlorine residuals." Within the preferred pH range of swimming pool water, namely 7.2-7.8, monochloramine is the main compound present. Numerous investigators, notably Wattie and Butterfield[1] have shown that the ability of chloramines to destroy bacteria is far less than that of free available chlorine. These investigators demonstrated that in chlorine-free, chlorine demand-free water of pH 7.8 some Escherichia coli survived after 120 minutes' exposure to water containing 0.30 ppm of chloramine and at pH 8.5, some E. coli survived for 240 minutes at the same chloramine concentration, namely 0.30 ppm. In contrast, no E. coli survived after five minutes' exposure to water containing only 0.07 ppm of free chlorine at pH 7.8 and at pH 8.5 no E. coli survived after 10 minutes' contact with water containing 0.07 ppm of free chlorine. The statement is commonly made that free chlorine is approximately 30 times as effective as chloramines in bactericidal efficiency.

Also, when chlorine is added in an amount sufficient to destroy ammonia and other nitrogenous compounds present in the water, there is formed nitrogen trichloride which has a distinctive odor and may cause eye and nose irritation to some bathers.

It has been shown that the bactericidal activity of free chlorine is due almost entirely to hypochlorous acid formed by its reaction with water. Since at high pH values this acid is neutralized to form the hypochlorite ion, the bactericidal efficiency of chlorine decreases steadily as the pH of the water increases.

The following tabulation illustrates the effect of pH on the hypochlorous acid present in water:

	Per cent of Free Available Chlorine as: [2]		
pH	Molecular Chlorine	Hypochlorous Acid	Hypochlorite Ion
4	0.5	99.5	0
5	0	99.5	0.5
6	0	96.5	3.5
7	0	72.5	27.5
8	0	21.5	78.5
9	0	1.0	99.0
10	0	0.1	99.9

Finally, one may envision a situation where a free chlorine residual is present in the water at the beginning of the daily peak load of a swimming pool. As the ammonia content of the water increases, however, this free chlorine residual is quickly converted to a combined chlorine residual and the bactericidal property of the chlorine in the water is greatly decreased as has been shown.

In recent years attention has been directed toward the use of iodine as a disinfecting and sanitizing agent in a variety of fields, notably in water purification and in restaurant, dairy, and hospital sanitization. Several novel and effective iodine preparations, such as the "Iodophors" and other products which liberate elemental or "diatomic" iodine, are now on the market. The public is becoming accustomed to iodine's use in fields other than as an antiseptic. It is widely used in the form of iodized salt in human foods and animal feeds. Our Armed Services some years ago adopted "Iodine" tablets in place of Halazone (chlorine) tablets for disinfection in the field of water in canteens, based on the finding that iodine in drinkable dosages will kill amebic cysts while chlorine will not. And, finally, the price of iodine has come down to a level where the unique properties of iodine will permit it to compete more favorably with its cheaper and widely used halogen competitor, chlorine.

The very practical result of these developments is that iodine is acquiring a steadily increasing commercial importance in routine disinfection and sanitization procedures. More and more federal, state, and local agencies are approving the use of iodine preparations for various disinfecting and sanitizing purposes, notably in the fields of dairy, restaurant, and hospital sanitization previously referred to; and further growth in these directions at an accelerated rate would seem to be a reasonable expectation. Because of these developments it has been felt that a thorough study should be made of the efficiency of iodine as a disinfecting agent for swimming pool water and this investigation was planned with that objective in view.

Swimming Pools Used for Study

In planning the study two courses of action were open. The first was to select one or possibly two pools for detailed and intensive study of the various factors involved. The second was to select a larger number of pools varying in size and bathing load and to study them for an extended period of time under actual operating conditions. The latter plan was adopted. Seven pools in Gainesville, Fla., and one in Coral Gables, Fla., were selected for the study. The basic data describing the various pools are given in Table 1. They ranged in size from the Olympic size pool of the University of Florida to small home-type pools at three motels. Bathing loads varied from 1,727 persons who used the University of Florida pool on the first day of the study to as few as three persons per day using the small motel pools.

For each of the three large pools used in these studies hourly or daily bather counts were available. For the smaller pools bathing loads are based on informal records kept for us by swimming pool operators. It may also be mentioned that bathing loads were fairly

Table 1—Basic Data on Eight Pools Studied

Pool No.	Identification	Size	Depth Shallow End	Depth Deep End	Capacity Gal.	Number and Type of Filter	Type of Chlorinator	Other Chemical Feeders Soda-Ash	Other Chemical Feeders Alum	Recirculation GPM	Theoretical Turnovers
1	Manor Motel	28¼′ x 58½′	3′	8′ 6″	66,000	Diatomite (1)	Solution pump	No	No	185	4
2	Lincoln Pool	42′ x 75′	3′ 3″	10′	148,000	Diatomite (1)	Gas	Yes	No	400	4
3	Tom Sawyer Motel	20′ x 40′	3′	8′	33,000	Pressure Sand (4)	Solution pump	Yes	Yes	60	3
4	Bambi Motel	20′ x 40′	3′	8′	33,000	Diatomite (1)	Solution pump	No	No	90	4
5	Holiday Inn	30′ x 50′	3′ 4″	8′ 6″	68,000	Diatomite (1)	Solution pump	No	No	190	4
6	Golf Club*	35′ x 70′	3′	9′	98,600	Diatomite (2)	Gas	No	No	225	3†
7	University‡	60′ x 150′	4′	12′	500,000	Diatomite (3)	Gas	No	No	1,150	3
8	Riviera Courts Motel, Coral Gables	20′ x 43′	3′	8′	36,000	Diatomite	Solution pump	No	No	90	4

* Pool emptied weekly on Sunday nights, refilled Monday. Own well used as water source. Alkalinity 136 ppm.
† Pump capacity has dropped to 225 GPM permitting only three turnovers—theoretical 3.7.
‡ pH + soda-ash blocks used for pH control.

uniform throughout the day since the three large pools were used for instructing swimming classes in the mornings and were available for recreational use in the afternoons and early evenings.

Description of Field Procedures

As a control, the first three weeks of the study, July 7-25, were devoted to the collection of data representing normal swimming pool operation with chlorine gas being used at the three large pools and high test hypochlorite at the four small Gainesville pools. Values for residual chlorine and pH during this period were taken from pool operating records or determined at the time of the visits either by the pool attendant or the field chemist. At the Riviera Courts Motel in Coral Gables data covering the use of chlorine were collected for three days and for the use of iodine for the seven following days.

Methods for Addition of Iodine

For the three weeks' period beginning July 28 and ending August 15, 1958, all pools except one received potassium iodide equivalent to a dosage of one ppm of iodine on Tuesdays and Saturdays of each week. The University of Florida pool received the iodide dosage for only two weeks since that pool was closed for the summer on August 8.

The crystalline potassium iodide was broadcast by hand over the surface of the pool with a small amount of chlorine added to release free iodine. This operation was carried out in accordance with the Marks and Strandskov "Procedure for Disinfecting Aqueous Liquid" (U. S. Patent 2,443,429 assigned to Wallace and Tiernan Products, Inc.). On August 16, the dosage was doubled; potassium iodide equivalent to two ppm of iodine being applied to the four Gainesville motel pools twice weekly during the remainder of the test period.

At the Gainesville Golf Club pool treatment with potassium iodide using a minimum amount of chlorine to release free iodine was discontinued on August 20. Feeding of a partly saturated water solution of iodine was begun on August 21. This feed was continued through September 1.

At the Lincoln pool for the greater part of the tests with potassium iodide excessive amounts of chlorine beyond the amounts required for releasing the contained iodine were inadvertently fed. Such data were not representative. On August 20 at the Lincoln pool feeding of a 2 per cent solution of iodine in potassium iodide was begun and continued through September 1.

From time to time during the course of the tests a combination of potassium iodide and an iodine-releasing material was added to one or another of the pools. At the Riviera Courts Motel this was the only method of application used and all bacteriological data from that pool reflect results obtained in this manner.

Sampling

Methods of sampling are described in Appendix A.

Laboratory Methods of Analysis

Bacteriological tests were made as described in Appendix B.

Chemical tests for determination of residual chlorine and residual iodine are described in Appendix C.

Discussion of Data

During the study, chemical and bacteriological tests were made regularly. The number of chlorine and iodine samples tested and the number having a most probable number of 2.3 or less are shown in Table 2.

Efforts were made to determine the lowest concentration of iodine that would be effective. Accordingly, some very low iodine residuals were recorded.

Table 2—Relationship of Halogen Residual to M.P.N.—Eight Pools

Distribution of Values	Cl_2 No.	Cl_2 Per cent of Subtotal	I_2 No.	I_2 Per cent of Subtotal
Samples with no measurable residual	2	..	41	..
Samples with M.P.N. 2.3 or less	2	100.0	23	56.1
Halogen residual 0.01–0.09 ppm	0	..	36	..
Samples with M.P.N. 2.3 or less	..	..	26	72.2
Halogen residual 0.10–0.19 ppm	46	..	36	..
Samples with M.P.N. 2.3 or less	36	78.3	29	80.5
Halogen residual 0.20–0.29 ppm	67	..	31	..
Samples with M.P.N. 2.3 or less	60	89.4	27	87.1
Halogen residual 0.30–0.39 ppm	40	..	16	..
Samples with M.P.N. 2.3 or less	33	82.5	14	87.5
Halogen residual 0.40–0.49 ppm	35	..	5	..
Samples with M.P.N. 2.3 or less	33	94.3	5	100.0
Halogen residual 0.50 ppm or more	82	..	57	..
Samples with M.P.N. 2.3 or less	74	90.2	56	98.2
Halogen residual undertermined but +	24	..	48	..
Samples with M.P.N. 2.3 or less	23	95.8	47	97.7
Total samples, 8 pools	296		270	
Most probable number $\leqq 2.3$	261		227	
Fraction of total samples	88.1%		84.1%	
Total samples with measured Halogen res.	270		181	
Most probable number $\leqq 2.3$	236		157	
Fraction of subtotal as described	87.4%		86.7%	
Total samples Halogen res. > 0.20 ppm	224		109	
Most probable number $\leqq 2.3$	200		102	
Fraction of subtotal as described	89.3%		93.6%	
Total samples Halogen res. > 0.10 ppm	270		145	
Most probable number $\leqq 2.3$	236		131	
Fraction of subtotal as described	87.4%		90.3%	

Inspection of Table 2 shows that 28 per cent of the samples had iodine residuals below 0.10 ppm. Even at these low levels 63 per cent of the samples revealed water of acceptable quality.

In most of the tests using iodine it was fed in the form of potassium iodide at the rate of two to four parts per million of iodine per week. The iodine was released by feeding chlorine at levels low enough to leave a residual of iodide in addition to the free iodine made available. (One part of iodine is released from iodide by 0.28 part chlorine.)

Some of the free iodine which was reduced to iodide by combining with bacteria and other matter again was released by subsequent applications of chlorine, thus maintaining free iodine residuals.

In two pools it was not feasible to decrease the chlorine fed to the very small amount required to liberate iodine from the potassium iodide. Under these conditions it is assumed that the excess chlorine converted the iodine to the inactive iodate form.

In another pool, potassium iodide and an iodine-releasing agent were fed by hand to the surface of the pool. The average daily dosage of iodine was one part per million with an average residual of 0.28 ppm. This emphasizes that a small pool with a light bathing load does not differ greatly in total iodine consumption from a large pool with a very heavy bathing load. It also indicates that the iodine demand of a given pool is much less dependent upon the bathing load than is the case with chlorine.

On the basis of equal residuals of iodine and chlorine, the quality of the treated water is the same. As pointed out, however, free chlorine combines quickly with ammonia introduced by swimmers and may be immediately converted to the slow acting chloramine form. Another factor of importance is the amount of the element required to maintain a proper residual. For example, in one pool chlorine was fed at the rate of 7.7 parts per million per turnover or 15.6 ppm per pool day. This is at the rate of 109.2 ppm total chlorine per week. Chlorine residuals ranged from 0.2 to 0.8 ppm with pH between 7.1 and 7.9. In contrast, iodine fed at the rate of four ppm per week as potassium iodide (released by small amounts of chlorine) provided water of acceptable quality with residuals in the range of 0.11 to 0.40 ppm, with some higher values recorded.

Relative Effectiveness of Chlorine and Iodine as Algaecides

During the course of the work all pools were closely observed for the possible appearance of algae. During the entire investigation no algae were present in any pool in a concentration visible to the naked eye. This is believed to indicate that both chlorine and iodine acted as efficient algaecides during the course of the work. Two other items of evidence may be offered in support of that statement. The first is that at the Tom Sawyer Motel pool a small wading pool adjoined and was connected to the main pool. Growths of algae were visible in the wading pool during the course of the work and living cultures were removed for laboratory study, whereas none were present in the main pool. This probably resulted from poor recirculation and the very shallow water depth, approximately 18 inches. Second, within a week following shut down of the Lincoln pool, a prolific growth of algae developed before the pool was drained.

One of the authors of this paper is conducting a careful laboratory study of the relative effectiveness of chlorine and iodine as algaecides and his results will be published as a separate paper. Meanwhile, he has summarized his conclusions as follows:

"The control of algae in swimming pools shows two aspects. (a) The immediate growth of algae, especially in abundance as evidenced by visible observation, is well controlled by the usual algaecides and by iodine, not usually thought of in this connection but apparently fully effective. (b) There is, however, a small group of algae which in treated pools either grow with extreme slowness or remain static. When samples from such pools are brought into the laboratory and maintained at suitable temperatures but not open, they evidently develop growths of blue-green algae, chlorococcales (green algae), and Xanthophyceae (yellow algae). Control, therefore, must be maintained for these can readily seed a pool if treatment fails."

Effect of Iodine on Color of Pool Water

When either pellets or crystals of a mixture of potassium iodide and an iodine-releasing compound were added by hand to swimming pools, there developed a dark brown cloud at those points

where iodine was being released. When this was done with swimmers in the pool the cloud was quickly and uniformly disseminated throughout the water. When, however, iodine was added continuously through the pool circulating system no such brown cloud or visible color developed. The color of the water of pools containing appreciable iodine residuals was a clear, pleasing aquamarine green.

Development of Tastes and Odors

During the period when chlorine was being fed, the water of all pools exhibited the familiar odor and taste associated with the presence of that element or its compounds in water. It was more noticeable in some pools than in others but it was present everywhere. On the other hand, following the beginning of iodine feed no perceptible odor or taste was present in the water of any pool, a fact which was the subject of frequent comment not only by members of the study staff but by a large number of bathers using the pools. No complaints of eye irritation were received from bathers.

Summary and Conclusions

A study was made of the effectiveness of iodine as a disinfecting agent for swimming pool water. The study period extended from early July to mid-December, 1958. Eight pools were employed, seven in Gainesville, Fla., and one in Coral Gables, Fla. The pools varied in size from the Olympic-size pool of the University of Florida to small home-type pools at three motels, and in bathing loads from over 1,700 persons per day to as low as three persons per day. The study staff included, in addition to the three senior authors, two additional chemists, one bacteriologist, and two laboratory technicians. A total of 645 individual samples were analyzed chemically and bacteriologically, and a total of 6,588 tubes were inoculated. Over 1,600 miles were traveled by car in collecting samples during the study. Based upon the studies described in this report and the large amount of data collected, the following conclusions seem justified:

1. When compared upon the basis of halogen residuals in the range usually employed in swimming pools, iodine was fully effective in the disinfection of the water of the eight swimming pools treated. It was not only equal to chlorine but in many cases superior.

2. To maintain the desired iodine residual, particularly in pools with high bathing loads, required a much smaller applied dosage than was true of chlorine. Such iodine dosage was only slightly higher than that required for the disinfection of a home-type pool with a low bathing load.

3. To phrase the above conclusion in another way, iodine residuals appear to be much less dependent upon bather load than do chlorine residuals. This might be expected because iodine does not form substitution compounds with ammonia as does chlorine. One may conclude from this statement, therefore, that at the beginning of a bathing peak, a given iodine residual might be safer than a like "free" chlorine residual since there exists the strong possibility that the "free" chlorine residual might quickly be converted to a much less effective chloramine residual, whereas the iodine residual would not be affected by ammonia introduced by swimmers.

4. Because of the number of factors involved, it is not possible to give arbitrary figures for either chlorine demand or iodine demand which would fit all pool situations. However, it is easier to approximate the average iodine demand of swimming pools than the chlorine demand since it is much less dependent upon bathing load, the most important single factor involved. These studies appear to indicate that a daily dosage or one ppm of iodine would be sufficient under most conditions of use for home pools and perhaps double that figure for more heavily used public pools.

In terms of residuals, approximately 0.2 ppm of iodine should be sufficient to provide water of satisfactory quality. A residual of 0.1 ppm was almost as good.

5. No odors or tastes or irritations of the eyes of bathers were produced by the iodine residuals employed during the course of these studies.

6. Although most of the studies were conducted during the hot summer months with high temperatures predominating in seven of the pools, no visible growths of algae were noted during the testing period.

7. When iodine was uniformly distributed throughout the swimming pool either through the recirculation system or otherwise, no brown iodine color was observed, the over-all effect being the production of a pleasing aquamarine green color in the swimming pool water.

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APPENDIX A

Sampling

Individual samplers were constructed for each pool and left at the pool for use during the entire course of the investigation. A sampler consisted of a smooth nine-foot cypress pole with a four by four inch block nailed to the bottom. A one-liter narrow mouth glass stoppered bottle was placed on the block and stoutly wired in place with heavy aluminum wire. These samplers proved most satisfactory.

The method of sampling was as follows: The bottle was immersed in pool water, allowed to fill, inverted and allowed to drain while shaking vigorously. This procedure was repeated four times before a sample was collected. The bottle was then plunged almost to the bottom of the pool near the diving board at the deep end and the operator walked slowly to the corner of the pool, turned and proceeded toward the shallow end, meanwhile gradually raising the bottle toward the surface. Using this procedure approximately 18 seconds were required to fill the bottle which provided a representative composite sample both with respect to depth and area. The top was quickly removed from a wide mouth, 500 ml sterilized glass bottle containing sufficient sodium thiosulfate to remove the halogen residual. The bottle was quickly filled, almost but not quite to the top, from the sampling bottle, the top replaced and the sample immediately placed in the ice box. Ice boxes were available at all but one of the pools for refrigerating samples. Since the University of Florida pool adjoins the building in which the laboratory was located, all samples for bacteriological examination were carried to the laboratory by the pool attendant at the time of collection and dilutions immediately made by the laboratory staff.

At each pool the owner, operator, or a swimming pool attendant or life guard was selected and carefully trained in the technic of sample collection. These individuals routinely collected samples for bacteriological examination during the study period. Most of the time the field chemist on the project either assisted or supervised the collection of the first morning sample while on his rounds to collect the bacteriological samples of the previous day and leave fresh sterilized bottles for the current day. This procedure proved quite satisfactory and the results of the study indicate that very few samples were contaminated by handling during the course of the investigation.

Samples for chemical examination were collected twice daily, the first one in the morning at the time the field chemist made his rounds to collect the bacteriological samples of the previous day. A second visit was made to each pool in mid-afternoon by the field chemist and a second sample collected.

APPENDIX B

Laboratory Methods of Analysis—Bacteriological

Bacteriological analyses were made following exactly the methods outlined in "Standard

Methods for the Examination of Water, Sewage, and Industrial Wastes," Tenth Edition. Upon arrival at the laboratory all samples were entered in the log book, together with all pertinent data with respect to date and time of collection, pool number, and date of examination. Standard lactose broth (Difco dehydrated) was inoculated using three dilutions of the sample and three tubes per dilution. The dilutions used were three 100-ml portions, three 10-ml portions, and three one-ml portions. All tubes were incubated at 35° C. At the end of 24 hours' incubation, tubes were examined for gas production and the presence of gas was recorded as a positive presumptive. Using a sterile three-mm loop all positive tubes were transferred to Brilliant Green Bile Broth 2 per cent (Difco dehydrated) for confirmation of the coliform group. Production of gas in the B.G.B. tube was considered a positive test for the presence of the coliform group. The lactose broth tubes were incubated for an additional 24 hours and any tubes showing gas production were treated in a similar manner. In recording data positive presumptives failing to confirm in B.G.B. were ignored and only those samples confirming in B.G.B. were considered as positive. The "coliform index" was recorded as the "most probable numbers" per 100 ml of sample using Table 21c, page 386, in "Standard Methods for the Examination of Water, Sewage, and Industrial Wastes," Tenth Edition. Of a total of 6,588 lactose broth tubes inoculated during the course of the work from chlorine and iodine treated pools, about 15 per cent showed gas formation in 24 hours and an additional 5 per cent showed gas in 48 hours. Of the tubes showing gas in 24 hours, about 90 per cent confirmed in B.G.B., as might be expected, and of the tubes showing gas in lactose broth in 48 hours, about 70 per cent confirmed in B.G.B.

APPENDIX C

Laboratory Methods of Analysis—Chemical

Most determinations of residual chlorine during the first three weeks of this study were made using orthotolidine and kits available at the pool. Occasionally, however, an amperometric titrator was carried to some of the pools and determinations run at the pools. Similarly, during this period pH values were determined colorimetrically using pool kits.

When the feeding of iodine was begun, however, the one-liter morning and afternoon samples were placed in a slurry of cracked ice and water and carried to the laboratory for analysis. A number of tests, made both at pool site and on identical samples iced and carried to the laboratory, showed that iodine residuals did not decrease appreciably in samples so treated. Iodine residuals were determined amperometrically, and pH values were determined using a Beckman Model G pH meter. Three Wallace and Tiernan amperometric titrators were available and were used in rotation. When not in use electrodes were allowed to stand in a weak solution of iodine in order to increase the sensitivity of the instruments.

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The author of this paper gives a comprehensive picture of the development and status of child day care in a large city. Furthermore, her account presents the problems that have to be tackled as well as the results that can be achieved through intelligent planning by a health department.

CHILD DAY CARE, A PUBLIC HEALTH RESPONSIBILITY

Cornelia Goldsmith, F.A.P.H.A.

JUST what is meant by "child day care"? Is day care new or old in this country? Why is it receiving so much attention these days? Why is there such rapid expansion throughout the country? What is the story of day care in New York City? Under whose jurisdiction does it belong?

One hears many answers to each of these questions. The most appropriate definition in my opinion is the broad and comprehensive one: "Child Day Care is the day time care of groups of young children, while they are away from their own homes and parents." By this definition many special forms of day care are included, such as day nurseries, child care centers, nursery schools, kindergartens, laboratory schools, preschool groups, parent cooperatives, church groups, and others. To use the over-all term in a narrow connotation is often confusing. Too many people think of day care as that particular type of child care program which serves the children of families requiring help in order to give proper long-day care to their children (the disadvantaged families). Working mothers, families with acute distress caused by illness, death, or other serious family disruption, and those with economic inability to provide for their children, are given certain priorities in publicly sponsored programs or those under the auspices of social agencies. However, the variety of auspices, philosophies, and patterns under which programs operate indicate the wide variety of family and community needs which stimulate a democratic grass roots response from many different groups and individuals wanting to serve children.

The concept of day care is not new. A hundred years ago and more, day nurseries served the infants and young children of the poor. Large groups of children were given "custodial care" as a benevolent charity. In New York City the first day nurseries date back to the days following the Civil War. In those days boards of well-to-do ladies provided day-time group care for the children of impoverished and deserving families by keeping them clean, safe, well fed, and physically healthy. Matrons were put in charge of these large groups of infants and young children, and paid a servant's wage. Large bronze plaques covered the dark brown walls and smaller plaques hung at the end of each white crib, engraved with the name of the donor of funds in support of the work.

A hundred years ago it was not difficult to determine appropriate areas of jurisdiction as far as responsibilities for

children were concerned. The school looked after matters of the intellect, the doctor cured all bodily ills, the church handled spiritual matters, and the emotions were strictly under control within the family. Poverty was the concern of the wealthy.

Thus as long as each component part of every individual youngster could be neatly separated and categorized, there was little, if any, basis for argument or conflict (or cooperation for that matter). The great "conflagration" of the First and subsequently of the Second World War, broke this well established, firm pattern of thought. Man began to look with new awareness and concern on man. Scientific research began to penetrate the surface calm. By means of intensive study, recorded observation and research efforts, the process of human growth and development was revealed. New concepts of motivation and of behavior stirred and came to life. New knowledge, as unique at that time as is today's new knowledge about space, created new professional fields and developed older ones such as psychiatry, mental hygiene, child guidance, social work, early childhood education, and the like. In the light of all this the beginning of life and the early years that followed acquired new significance. The concept arose that these early years were perhaps the "key years" to those that followed. The "whole child" was talked about as though his wholeness were a great discovery. Instead of concern in tabulating and defining his numerous and intricate parts, their interrelatedness became significant. Intangible as well as tangible influences were found to condition a child's growing, learning, maturing. The search to find out more about "what makes Johnny tick," or not tick, opened profound new areas of knowledge and insight.

Under the impact of this new thinking, the previously clearly defined edges between health, education, and welfare lost their sharpness. As the edges of these fields became hazy and as each expanded its area of concern, each seemed to intrude on the previously exclusive territory of the other. As a result, professional groups either defended their historic and often legal boundaries against all comers, or they sought and often found new ways of pooling their efforts and of working out cooperative plans and procedures. With all this, the young child came into his own. He was increasingly valued and of concern to the major fields and to each and every one of the new subsidiary fields.

In New York City as far back as 1895, the Sanitary Code of the Department of Health regulated all centers giving daytime care to groups of young children. It was then concerned only with fire protection, building safety, sanitation, and the prevention of disease. By 1914, after the Bureau of Child Hygiene had been formed, physicians began to give regular medical examinations to all the children in the nurseries. Then unfortunately this program lapsed for a period of time.

It was not until 1942, when the Second World War had precipitated a child care crisis in New York City, that citizen concern about preschool children became acute and articulate. Fathers were overseas, mothers were working in defense plants, and children were in no-man's-land. No one knew how many nurseries or child care centers existed, how many children were involved or under what conditions they were being cared for. All this happened at the very time when so much had been learned about the growth and development of young children. This awareness helped to high-light public concern for the obvious neglect of young children left to roam the streets with latch keys around their necks or locked in parked cars to keep them safe while mother went off to work in industry. Groups of young-

sters were left in basement premises in the care of building superintendents. Obviously something had to be done. Impelled by the urgency of the situation citizen groups met and explored possibilities. Only the Health Department, it seemed, had jurisdiction over *all* the day care services, regardless of the auspices under which they were operated. Under the leadership of Dr. Leona Baumgartner, then director of the Bureau of Child Health, representative groups of experts from the fields of education, pediatrics, mental hygiene, nutrition, public health, and social work began to spell out their recommendations for the revision of the existing but until then quite limited regulations of the Sanitary Code and to reactivate their enforcement. They wrote a comprehensive, up-to-date set of regulations which assured not only the safety and hygiene of the premises, but which had as a main focus the total well-being of the children themselves. The new knowledge about children and their fundamental needs was the foundation of these regulations. In its final form the revised code stated such things as "children shall have comfort during meals." In addition to adequate light, heat, ventilation and space, and appropriate equipment, they were to have nutritional food, regular rest, daily indoor and outdoor activity. No child was to be permitted to be in attendance unless he had previously had a thorough medical examination and then a reexamination every six months, with a full report of each examination on file. "Constant and competent supervision" was to be provided. All members of the staff were to be "friendly and emotionally stable and to have a sympathetic understanding of family and children's problems" as well as being physically healthy. Once granted, the license was to be renewed every two years.

In February, 1943, the code recommendations were approved by the Board of Health. Behind the regulations lay the power of the law to enforce them. A survey of all the five boroughs of New York City had been undertaken. The pilot project was under way.

With concern for the physical, mental, and emotional health of the children, it seemed logical and appropriate to assign a multiprofessional staff to undertake this pioneering job. Aspects of health, welfare, and education were necessarily involved in each and every day care program throughout the city. Educators, public health nurses, a social worker, and a pediatrician were then employed as consultants to begin the work. Some 500 day care services were found in operation. The auspices under which they operated, the ages and numbers of children, the premises and types of program were infinitely varied, ranging from the most commendable to the worst conceivable. The days of Dickens were obviously still with us. Discipline was still being maintained through being locked in the cellar or sitting endlessly on a high stool in a corner with a dunce-cap on one's head, being struck with a cat-of-nine-tails, or rapped over the knuckles with a ruler. The mass care of infants in long rows of hospital cribs was also still being practiced. Overregimentation of the children, constant "lining them up," complete lack of toys and equipment or of a suitable program, untrained and unqualified staff, poor dietary, poor health practices, and unsanitary premises were found far too frequently. Sometimes children had only the floor to sit on, for lack of chairs; no rest was possible for lack of beds; no food was prepared on the premises but was carried from home by each child in a paper bag—cold remnants that were left over from breakfast. Only half of the operating services met the required standards. Yet flagrant abuses were stopped, exploitation of young children for financial gain became almost impossible when standards had to

be met and sufficient numbers of staff had to be employed, when food had to meet proper nutritional standards, when overcrowding was disallowed. Wherever possible, time and help were given to improve conditions. Only a handful of services were actually closed, by court action if persuasion was of no avail. And slowly, slowly with the help of many community groups and many individuals, the licenses on the walls of some 500 day care services assured parents that Sanitary Code compliance was in effect.

Gradually the consultant staff was expanded—but always on a multiprofessional basis. Today, ten full-time experienced and well trained consultants are at work. They are drawn from the fields of public health nursing, early childhood education and social group work, and pediatrics. Nutritionists, sanitarians, and public health educators as well as experts from the Bureau for Handicapped Children are used as needed. Teachers and directors in charge of the children are now required to be as well qualified in their field as are the teachers or principals of elementary or high schools. There are now over 900 fully qualified teachers trained in early childhood education working in the 500 licensed (or approved) day care services. An additional 235 teachers are in process of completing their training while they work. No one is losing his job if he is willing to complete his training in the field of early childhood education and if he is not harming children.

Today some 20,000 preschool children are attending the steadily increasing numbers of licensed (or approved) day care services in New York City. These are still under a wide variety of auspices. Of these 20,000, some 5,000 attend the Child Care Centers for working or incapacitated mothers. There are operated by private boards and subsidized by public funds granted through the Department of Welfare and amounting to over four million dollars annually. No effort is made to stereotype programs into any single mold or pattern. A wide variety of philosophies, of goals and policies, religious affiliation and types of sponsorship is encouraged. The concept of health is interpreted as including physical, mental, and emotional health. Follow-up of the doctor's recommendations is carried out by a part-time nurse on the center staff in cooperation with the director, the teachers, and the child's parents. Even with working mothers every effort is made (and is successful more often than not) to have the mother present when the doctor examines the child in the center. The doctor also orients staff members as well as parent groups to sound public health practices and helps them to make satisfactory plans for the health protection of all the children. Should any outbreak of contagious disease or food poisoning occur, it is reported to the Bureau of Preventable Diseases which takes immediate appropriate action. Accidents whether at home or at school are also reported to the Health Department. A new eye screening program is under way to assure that, if needed, a child will receive proper eye care before he goes into the first grade.

The advantage of having day care services in urban communities as a responsibility of a department of health is clear. No other department has such an inclusive concern for all the children of all the people. Other departments frequently lack the authority to put minimum standards for such young children into effect. But far more important than the question of locating this work in a particular department is the need to have a mature, experienced multiprofessional consultant staff dedicated to working together to bring the benefits of today's knowledge to the rapidly increasing numbers of young children in their first experiences with group living and their first experiences away from their

own homes. All first experiences have a special significance and this is no exception.

Many aspects of modern living tend to expand child day care services. Our rapid concentration in large urban areas, with sharply reduced play space indoors and out, is an important factor. Other factors are related to our changing cultural patterns, such as earlier marriages, larger families, and rising living costs which stimulate more and more women to join the labor force.

Child day care services are apparently here to stay. Under good conditions, with assured protection, they can bring positive values to the children, their families, and the community as a whole.

Here is the most natural, most telling, and most effective time and place to bring parents into the team, to carry out preventive health measures, to initiate interdisciplinary communication between the professions and between agencies, all at one and the same time. We have come to recognize the "whole child" —and now we are tackling the "whole situation" in which he lives and grows and has his being.

Miss Goldsmith is chief, Division of Day Care and Foster Homes, City Department of Health, New York, N. Y.

This paper was presented before the Maternal and Child Health Section of the American Public Health Association at the Eighty-Sixth Annual Meeting in St. Louis, Mo., October 30, 1958.

AMA Resolves a Sharp Issue

"There is no generally held opinion declaring that participation in closed-panel medical care plans would render a physician unethical." With this declaration the American Medical Association ended its long-standing opposition to closed-panel medical care plans, among them those sponsored by labor unions. Thus, it has recognized that an individual has the right to choose the medical care program in which he will participate, as well as he has to select and pay his own doctor.

The declaration came at AMA's recent annual meeting in Atlantic City, following a five-year study by a 15-man committee whose chairman was Leonard W. Larson, M.D., chairman for the association's Board of Trustees. The House of Delegates approved the committee's findings embodied in the "Report of the Commission on Medical Care Plans."

Pools of suspensions of killed leptospirae of different serotypes have been found to furnish a broad-spectrum antigen which, in combination with polystyrene latex particles, provides a valuable reagent for the simple detection of leptospiral antibody. The latex-agglutination test compares favorably with conventional diagnostic tests. Advantages offered include simplicity and rapidity of performance and a stable noninfectious antigen.

A SIMPLE SCREENING TEST FOR THE DETECTION OF LEPTOSPIROSIS IN HUMAN BEINGS AND ANIMALS

Thelma F. Muraschi

PRINCIPLES of a simple agglutination test for rheumatoid arthritis, using sensitized latex particles that were described by Singer and Plotz,[1,2] were applied to a macroscopic agglutination test for evidence of leptospirosis. Latex-leptospiral suspensions were found to form stable, readily recognizable aggregates in the presence of leptospiral antibodies. The procedure is easily performed. The test requires only 90 minutes' incubation and the results are easily read with the naked eye. This report describes the technic of the test and presents an evaluation of sensitivity based on the examination of human and animal sera.

Materials and Methods

Polystyrene latex particles of uniform diameter of 0.81 micron were obtained from the Dow Chemical Company of Midland, Mich., in a suspension of 11 per cent total solids. A stock solution was prepared with distilled water to contain 1 per cent total solids. After filtration through paper (Whatman No. 40), the suspension was adjusted with water so that a 1:100 dilution in glycine buffered saline solution pH 8.2 had an optical density of approximately 0.25 at 650mμ in a Coleman Jr. spectrophotometer 6A with adapter 6.106. Measurements were made in 12 x 75 mm cuvettes.

A glycine saline buffer pH 8.2 recommended by the original authors was used in antigen mixtures and serum dilution.

Leptospiral suspensions were prepared from seven-day cultures grown in modified Korthof's medium[3] and killed by overnight exposure to formalin in 0.5 per cent final concentration. Suspensions were concentrated by high-speed centrifugation (13,000 G for 20 minutes), washed, resuspended in a small volume of formalized (0.5 per cent) 0.85 per cent NaCl solution, and homogenized by means of a tuberculin syringe with a 22-gauge needle. Large aggregates were removed by spinning for three minutes at 125 G. The supernate was then adjusted to an optical density of approximately 0.60 at 420mμ with the same diluent.

Test antigen consisted of mixtures of

0.1 ml of the standardized latex particle suspension, the optimum volume of standardized leptospiral suspension (usually 0.5 ml), and glycine buffered saline solution to give a total volume of 10 ml.

Optimum volume of leptospiral suspension to be used in tests was determined by titration with immune serum after suitable "aging" (10 to 14 days) of suspensions for stabilization. Increasing volumes (0.1-2.0 ml) of leptospiral suspension were added to 0.1-ml portions of standardized latex suspension and the mixture diluted to 10 ml with glycine buffered salt solution. Agglutination tests were prepared using equal volumes (1.0 ml) of serum in dilution and antigen suspension mixed in 12 x 75 mm tubes. Tests were incubated 90 minutes in a water bath at 56° C and spun for three minutes at 1,000 G. Examinations were made by transmitted light against a dark background while the aggregates were suspended by briskly tapping the tubes with the fingertips. Degrees of agglutination were recorded in the conventional manner (± to 4+).

Table 1 gives the results of a representative antigen standardization. Sera of healthy individuals served as controls. In zones of excess or deficiency of leptospiral suspension spontaneous agglutination tended to occur. An intermediate zone of specific reactivity was always apparent. The optimum volume, the smallest in this range, usually approximated 0.5 ml. Satisfactory suspensions retained reactivity for as long as two years.

A broad spectrum antigen was prepared for screening purposes by combining three serotypes as in the triple antigen earlier employed in complement-fixation tests.[4] Leptospira icterohemorrhagiae, L. pomona, and L. canicola suspensions were pooled in equal volume. These serotypes were the ones most frequently encountered in our serodiagnostic practice. The pool exhibited a high degree of cross-reactivity with antisera representing many other serotypes.

Sera used to evaluate sensitivity of the latex agglutination test were of three categories: (1) paired specimens from 25 human beings with leptospiral infections verified by isolation and identification of the inciting agent, (2) one specimen from each of four human beings with clinical leptospirosis confirmed by serologic tests, and (3) specimens from suspected cases of leptospirosis in seven dogs and 98 cattle. The first were shared by Dorothy McComb of the Harvard School of Public Health, who obtained

Table 1—Standardization of Latex-Leptospiral Antigen

Leptospiral Suspension Added*	Reactivity† with Antiserum Diluted 1: 4‡	8	16	32	64	128	Normal Sera 1:100 A	B	C	D	E	Saline Solution
2.0	4	4	4	3	3	3	1	1	1	–	–	3
1.5	4	4	3	2	1	2	±	±	±	–	–	2
1.0	4	3	2	1	–	–	–	–	–	–	–	–
0.8	4	3	2	1	±	–	–	–	–	–	–	–
0.6**	4	4	3	2	1**	–	–	–	–	–	–	–
0.4	4	4	3	2	1	2	–	±	±	–	–	2
0.2	4	3	3	2	2	2	1	1	1	–	–	3
0.1	3	2	2	2	1	1	1	1	1	–	–	3

* Ml./0.1 ml standardized latex suspension.
† The numerical values represent degree of agglutination, the negative sign (–), no reaction.
‡ x 10^3.
** The optimal volume for diagnostic tests.

Table 2—Comparison of Latex-Agglutination (LA) Screening Test with Agglutination-Lysis (AL) or Microscopic-Agglutination (MA) Reactions in Human and Canine Leptospirosis

Leptospira Isolated	Days Ill	Serum Reactions Quant.* AL or MA	Serum Reactions LA Screen†	Leptospira Serotype Indicated by Serology	Days Ill	Serum Reactions Quant. AL or MA	Serum Reactions LA Screen
austral. A	2	—	—		8	—	R
	39	300	—	pomona	21	1,000	R
"	3	—	—		6	—	—
	38	3,000	R		22	1,000	R
"	5	—	—		6	—	—
	82	1,000	—(R)		22	1,000	R
"	4		—(R)				
	86	100	R (R)		77	3,200	R
"	2	—	—(R)				
	83	300	—(R)	icterohem.	44	6,400	R
"	45	3,000	R	canicola	32	6,400	R
"	3	—	—				
	75	300	R	bataviae	41	1,600	R
austral. B	7		—				
	47	100	R				
"	3	—	—				
	22	300	R				
"	3	—	—				
	72	1,000	—	Canine sera			
"	3	—	—				
	41	300	R	canicola		800	R
"	5	—	—				
	52	1,000	R	"		200	R
"	1	—	—				
	46	300	R	"		400	R
"	4	—	—(—)				
	53	100	—(R)	"		12,000	R
"	3	—	—				
	67	100	R	"		800	R
"	4	—	—(R)		interval	25	R
	23	300	R (R)	"	15 days	200	R
"Kremastos"	2		—				
	32		R	"		400	R
"	3		—				
	57	100	R				
hyos	4		—				
	52	300	R				
"Robinson"	3	—	—				
	21	10	R				
pomona	2	—	R				
	45	300	R				
"	2	—	—				
	40	100	R				

* Titers are the reciprocals of the highest dilutions reacting with the respective homologous antigens.
† Reactive (R=2+ to 4+) or nonreactive (the negative sign=± to 1+) at a final 1:100 dilution with an antigen in which the leptospiral component was pooled L. icterohemorrhagiae, L. pomona, and L. canicola. The results in parentheses represent repeat tests in which the L. canicola component was replaced with homologous leptospirae.

them from Dr. J. T. Tonge of the Department of Health and Public Affairs, Brisbane, Australia, together with data on the inciting serotypes, days of illness, and agglutination-lysis titers. The second group was encountered in serodiagnostic practice and was examined in microscopic agglutination tests by Dr. Nell Hirschberg of the State Laboratory of Hygiene, Raleigh, N. C. Canine sera were selected from specimens submitted for routine serodiagnostic examination; bovine sera were furnished by Dr. Vincent Marshall* of the New York State Veterinary College, Cornell University, Ithaca, with a note that agglutination had occurred in dilution of 1:200 in a screening test with L. pomona.

Sera used to evaluate specificity of the test were from healthy individuals and from patients with syphilis.

Serum diluted 1:50 and 1:200 generally served for the screen test with pooled antigen.

Results

A comparison of the latex-agglutination screening test with agglutination-lysis or microscopic-agglutination reactions in human and canine leptospirosis will be found in Table 2. Twenty-nine human cases were represented. Reactions were observed in all eight cases in which a homologous antigen was used for testing and also in 16 (76 per cent) of 21 patients whose infections were caused by leptospiral serotypes such as australis A or B, hyos, bataviae, "Kremastos," and "Robinson" for which a homologous antigen was not available. The last two are thought to be new members of the hebdomadis and the pyrogenes serogroups, respectively.[5] The screen test failed to detect antibody in five of 16 cases of L. australis A or B infections. The initial negative result, however, was reversed in three instances by replacing the L. canicola component of the antigen with homologous leptospirae. There was insufficient serum to retest the others. Of interest is the fact that when homologous serotype was represented, detection of reaction in the test with the latex-agglutination antigen was earlier than in agglutination-lysis in some cases. Specimens from the seven dogs all reacted in the latex screening test as did the 98 bovine sera.

In tests of specificity using sera from 200 healthy and 25 syphilitic individuals only three of the former reacted and these in only the lowest final dilution (1:100) tested.

* The generous contributions of these collaborators are gratefully acknowledged.

Summary

Pools of suspensions of three or four individual leptospiral serotypes have been found to furnish a broad-spectrum antigen which in combination with polystyrene latex particles provides a valuable reagent for the simple detection of leptospiral antibody.

In sensitivity and specificity the latex-agglutination test compares favorably with the conventional diagnostic tests. Advantages offered include simplicity and rapidity of performance and the use of a stable noninfectious antigen.

Experience beyond that reported here has shown the test to be equally well suited to titrations of serum with individual serotypes. In general, titers have proved to be equal to, or higher, than those of the agglutination-lysis or microscopic-agglutination tests.

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Mrs. Muraschi is associate bacteriologist, Division of Laboratories and Research, State Department of Health, Albany, N. Y.

This paper was presented before the Laboratory Section of the American Public Health Association at the Eighty-Sixth Annual Meeting in St. Louis, Mo., October 29, 1958.

Two Medical Care Groups Merge

At a recent three-day Group Health Institute meeting in New York City, final action was taken on a merger of the 13-year old Group Health Federation of America and the seven-year old American Labor Health Association. The new organization, Group Health Association of America, represents about six million participants in prepaid medical care programs in the United States, Canada, and Mexico.

The stated goal of the organization is "To make available to every American, health service of the kind and quality he needs at a cost he can afford" and to promote "the right of the American people to organize their own plans for prepaying the cost of medical and hospital care, and the right of physicians to make their own arrangements to furnish medical care through such plans."

Among the speakers at the Institute were Senator Hubert Humphrey who urged the group to experiment with new methods of organizing and financing medical care. At the same time he asked for the "wise and compassionate counsel" of the American Medical Association in finding better organization of medical practice.

Paul R. Hawley, M.D., director of the American College of Surgeons, praised existing plans that combine prepayment and group practice as providing high quality medical care. In order to assure high quality of care plans must be able to select the physicians to give the medical care provided in their contracts. He indicated an estimate of half the surgery in the United States now being done by doctors who are inadequately trained for surgery.

Another speaker was Leonard W. Larson, chairman of AMA's Board of Trustees, who promised the renewed efforts of medical societies "to understand more fully the problems separating us at times, and to strive for realistic and practical solutions to these problems." This is reported to have been the first such occasion on which a leader in AMA spoke.

At a dinner given by the host to the institute, the Health Insurance Plan of Greater New York, the David M. Heyman Award for contributions to the development of group medical practice was awarded to Richard M. Carey, M.D., medical director of HIP's Upper Manhattan Medical Group. The presentation was made by Howard A. Rusk, M.D., director of the New York University-Bellevue Institute of Physical Medicine and Rehabilitation.

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Journal of Public Health

EDITORIALS

Frank v. State of Maryland

SINCE THE decision of the Supreme Court in Little v. United States in 1950, public health officials all over the United States have been in doubt about their legal authority to enter private dwellings to make health inspections. In the Little case, the high court allowed a decision of the Court of Appeals to stand which had held a search warrant necessary in all such situations where the occupant would not allow admission voluntarily. Now, in Frank v. State of Maryland, a split decision rendered on May 4, 1959, the U. S. Supreme Court has resolved these doubts to a substantial degree by upholding the constitutionality of a Baltimore ordinance providing a $20 fine for refusal to allow a health inspector to enter any house to investigate where he has cause to suspect that a nuisance exists in the house.

The constitutionality of the ordinance was challenged as a violation of the Fourteenth Amendment with a reference back to the Fourth Amendment prohibiting "unreasonable searches and seizures." A huge battery of public legal counsel from 13 states appeared before the court to argue the ordinance be upheld. All asserted that the requirement of a search warrant for all housing inspections either on complaint or on routine visits would substantially curtail housing programs all over the country. They stressed that these inspections were essential to the public health and safety and were not unreasonable, arbitrary, or oppressive. With all of their strength, in numbers as well as argumentation, the 19 city and state attorneys were able to convince only a bare majority of the court, five of the nine justices, of the soundness of their case. Writing for the majority, Justice Frankfurter stressed the fact that the attempted inspection of the defendant's home was merely to determine whether conditions existed which would be a violation of the Baltimore Health Code. If so, the defendant owner would be notified of the fact and would be given a reasonable time to comply. The inspection was not, therefore, intended to obtain evidence of the commission of a crime at that time. Justice Frankfurter also emphasized that the inspection was requested on valid grounds for suspicion that a nuisance existed as required by the ordinance. It was also requested during daylight hours and at no inconvenience to the owner. The majority was influenced by the fact that the defendant's refusal of

entry was quite arbitrary, that his resistance ". . . can be based, not on admissible self-protection, but on a rarely voiced denial of any official justification for seeking to enter his home. The constitutional 'liberty' that is asserted is the absolute right to refuse consent for an inspection designed and pursued solely for the protection of the community's health, even when the inspection is conducted with due regard for every convenience of time and place."

The decision of the Supreme Court is welcomed by most public health authorities. However, the holding is a narrow one in its context. The court has allowed only the imposition of a fine for arbitrary refusal to allow an inspection in daylight hours. It has not allowed a forcible entry under these conditions. Also, it condones the inspection even under these conditions without a search warrant only where the inspector has valid grounds to suspect the law is being violated and where he will issue only a warning or other advice giving the owner or occupant reasonable time within which to comply with any law, ordinance, or health regulation he may be found to be violating. It would seem that, when the inspector returns to check on whether the condition has been corrected, the inspector could well be refused admission without a search warrant. This would be due to the fact that, at that time, the inspector would clearly be seeking information upon which grounds he would seek immediate criminal fine or imprisonment against the violator.

The minority of justices of the high court, on the other hand, opened their opinion with the statement: "The decision today greatly dilutes the right of privacy which every homeowner had the right to believe was part of our American heritage."

These are strong words. By a vote of just one other member of the court, this would have been the majority. It should help to keep public health officials sober in their use of these powers.

(The Journal is indebted to William J. Curran, LL.M., S.M.Hyg., professor of legal medicine and director of the Law-Medicine Research Institute of Boston University, Boston, Mass., for the preparation of this editorial.)

Local Public Health Today

THE NEW "Directory of Local Health Units," an annual publication of the Public Health Service, has more than passing interest. This 1958 edition came out much later than usual. Even a cursory glance will tell why. It includes "all local areas which state health officers considered as organized to provide public health services . . . irrespective of whether the health officer serves on a full-time or part-time basis and whether medical, nursing, and sanitation public health services are available at all times."

There is also much other information not hitherto included. One can find out how many of the 1,490 jurisdictions are without either medical, nursing, or sanitation personnel, or without all three or any combination of two. Twelve per cent are without medical personnel; 2 per cent without nursing personnel, and 3 per cent without sanitation personnel. The two units that have none of these personnel are a small city in an eastern metropolitan area and a small midwestern county that lost more than a fourth of its population between 1940 and 1950. Thirty-one other units are without two of the services, indicating a rather wide variation among state health officers as to the definition of "organized to provide public health services."

One can also find out how many part-time health officers there are, how many administrative directors take the place of health officers, how many units have vacancies in the top position and for how long they have had them. The last

item provides some startling information. In one state alone, 20 of 27 jurisdictions reported health officer vacancies —eight for more than 15 years, seven for periods from 10 to 15 years, three for either five or eight years, and only two of one month. One-fourth of the 1,490 units report either health officer vacancies, or that the unit is served by a neighboring health officer, a part-time health officer, or a person not designated as health officer or administrative head. This is true in one-third of the state districts.

All public health workers, particularly those in a position to influence policy, are urged to study this directory, and with it the article by Barkev S. Sanders entitled "Local Health Departments: Growth or Illusion?" (Pub. Health Rep. Jan., 1959). Perhaps they will be reminded of a principle expressed by Haven Emerson when some of the activities with which we are now concerned were barely on the horizon. Before a community can undertake to carry out programs for the control of chronic disease, or to deal with air pollution, rehabilitation, radiation hazards, and other problems, it might be well to have a health organization for this purpose.

W. W. Peter Memorial Fund

The Women's Auxiliary of Calvert County Hospital in Maryland has established a Memorial Fund in honor of the late William W. Peter, M.D. The fund is to be used to establish an intercommunication system at the hospital in which Dr. Peter, during the years of his retirement in the county, had taken a deep interest. The fund was started by an initial contribution of over $500 from the Women's Auxiliary itself.

Those wishing to share in this memorial may send checks made out to the Women's Auxiliary of Calvert County Hospital with a corner notation of "Dr. Peter Fund" to Mrs. Lyttleton Gray, Treasurer, Prince Frederick, Maryland.

DISABILITY—CASH BENEFITS VERSUS REHABILITATION?

This statement was developed by the Medical Care Section and Committee on Medical Care Administration of the American Public Health Association as their conceptualization of certain problems and needs in rehabilitation.

Acceptance of social responsibility to provide for disabled persons (outside of institutions) has grown rapidly in the United States during the past few decades. It has taken the form principally of cash benefits—lump sum, temporary, or permanent payments. The list of beneficiaries is long and complex: victims of occupational accidents and diseases; war veterans with service-connected disabilities; persons suffering from blindness; children of disabled fathers; in some states, persons who are unemployed because of disability; those eligible for benefits under private insurance and pension programs; and many more.

Such programs constitute a basic part of the social security structure in this country. One may, of course, cite deficiencies—most notably the meager level of benefits allowed in many instances. However, such programs are growing, both in extent and in level of benefits and in 1956 the Congress added long-term disability benefits for persons 50-65 years of age to the basic social security program (OASDI).

While large-scale public programs for the disabled have concentrated on the economic requirements of living, more recently attention is turning to programs whose objective is restoring in the individual the ability to provide for himself. These include special education and training opportunities, sheltered employment, and in recent years, particularly, medical rehabilitation. Rehabilitation is growing through such efforts as those of the Veterans Administration, the Federal-State Vocational Rehabilitation Program, Crippled Children's Services, rehabilitation centers, and more aggressive treatment in public hospitals for mental disease and long-term physical disease. While it has a long way to go before catching up with the backlog or the potential demand, enough has been accomplished in this direction to indicate the tremendous potential of rehabilitation for disabled persons, even for those regarded as permanently and totally disabled.

Ideally, income maintenance and rehabilitation should complement each other. In practice, a certain conflict is developing. This conflict arises from many factors in the situation. On the one hand, those who participated in the long struggle to achieve cash benefits are concerned when another means of dealing with disability is offered as an alternative to adequate income maintenance. And some advocates of rehabilitation base their argument on the implication that cash benefits are unnecessary, destructive of character, and constitute a bar to rehabilitation.

It is regrettable that forces which should be complementing one another tend toward conflict. Some analysis of the situation seems desirable. Thus far cash benefits have received by far the greater emphasis and, in providing cash benefits it was necessary to establish criteria of disability as a basis for eligibility. This meant that each person seeking benefits had to qualify himself—to prove his disability.

Originating at a time when rehabilitation was underdeveloped, the programs had no alternative but to regard dis-

ability as relatively fixed, instead of constantly seeking opportunities to reduce or eliminate it. Moreover, the earlier programs dealing with occupational injuries inherited an adversary approach from the common law and employers' liability legislation, and to this day a claimant has to demonstrate his disability against efforts to belittle it by those seeking to hold down the cost of compensation.

This litigious system involves at least two elements adverse to rehabilitation. One of these is time itself. Rehabilitation experts emphasize that the process of rehabilitation is most successful when it starts early in the course of disability —with first aid in the case of injury. Delay in starting rehabilitation prolongs the period of recovery and limits its extent. The time required to assemble medical and other testimony in the case, schedule and conduct the hearing, undertake the appeals—all these aspects of the litigious system work against rehabilitation. A most unfortunate element in many such cases is the necessity of waiting until the condition is stabilized. Nothing could be worse from the standpoint of rehabilitation.

The other adverse effect of the system is psychological on the patient. Since he must prove disability he tends to believe it himself, aided oftentimes by his lawyer. The aim is to establish disability, not to achieve recovery. Again, this tendency goes in the opposite direction from rehabilitation. The necessity of insisting upon pain and limitation of function to establish disability presents a tremendous deterrent to rehabilitation in many cases.

Faced with these elements of the situation, physicians and some other rehabilitation personnel tend to say, "throw the lawyers out, they are only causing trouble." Some go to the extreme of opposing disability benefits on the grounds that they pamper and impede recovery and result in more harm than good. They imply (or state) that they would substitute rehabilitation for cash benefits.

Others, with more experience in the field of disability and social protection against its consequences, assert that the disabled and their spokesmen must press for the right to even meager income; otherwise the disabled may be deprived. There appears to be considerable historical justification for this position.

Recently, disability benefit programs have gone far beyond employment injury. Cash benefits are now available for nonoccupational disabilities, and they provide both temporary and permanent income replacement. This is a tremendous expansion in the scope of disability protection because nonoccupational conditions far outnumber employment injuries. In these new programs the old adversary concept is largely irrelevant and entirely inappropriate.

The time has come for a new look at this entire problem. Once it is recognized that rehabilitation and cash benefits are going to co-exist, the way is cleared for a much more constructive handling of the problem. It is necessary to avoid the extremes of assuming that either rehabilitation or cash benefits alone suffice. Despite the tremendous progress that has been made, there are many cases in which rehabilitation is not feasible. At a time when rehabilitation is far from perfect, when medical care itself has many imperfections and is sometimes very risky, when disability insurance has many limitations, it is unreasonable to expect that the disabled worker should be deprived of the income benefits that have long ago been accepted as necessary. Moreover, the backlog of needed rehabilitation is tremendous and facilities and personnel still fall seriously short of needs.

At the same time, cash benefits cannot replace the need for rehabilitation. Wherever possible, the disabled worker should be restored to his full place in

society rather than live on a limited invalidity pension. As rehabilitation programs become more effective in dealing successfully with a broader range of disabilities, rehabilitation must be recognized as a basic goal of any disability program. With rehabilitation in the picture, such programs should be very slow to declare anyone permanently and totally disabled. It is necessary to reexamine the old presumption of permanent and total disability conceived at a time when medical care was relatively ineffective and rehabilitation was largely unknown.

Every system dealing with disability should encourage rehabilitation and make it as widely available as possible. Positive incentives—instead of the old negative ones—must be brought into a system of disability protection. Whenever a wage earner is being rehabilitated, income maintenance benefits should be paid on a temporary basis, attempting to maintain a high level of income, contemplating a temporary condition in contrast to the lower levels of income protection that occur on retirement from the work force because of disability. Temporary income replacement benefits should be extended while there is prospect of a successful rehabilitation. Thus, an injured workman would be directly faced with a choice of working toward rehabilitation himself, not only for its future gains, but also for the practical reason of maintaining a higher level of protection for himself and his family.

The process of rehabilitation provides opportunities for an intimate knowledge of the worker's condition as it can be ascertained in the composite by the rehabilitation personnel working with the individual—physicians, therapists, social workers, counselors and others—who by their professional training and through their composite disciplines are best able to make a valid prognosis and evaluation of the disability, not in the old legalistic categorical terms, but realistically, practically, and much more competently than ever before. This enables disability determinations to be made far more competently and thus helps make disability insurance more feasible.

Safeguards are needed so that the worker is not taken advantage of through his own efforts to rehabilitate himself. Society should use restraint in cutting income benefits too precipitously and in discouraging the worker from rehabilitating himself. At the same time, where rehabilitation has clearly reduced disability, some savings to society are entirely appropriate.

What practical steps can be taken to resolve the situation?

First, rehabilitation services must be made generally available. Not only must facilities and personnel be adequate to meet current needs, but the tremendous backlog of cases must be handled.

Second, there must be recognition on the part of all concerned that rehabilitation and cash benefits to the disabled need not necessarily be in conflict. It appears that many obsolete aspects of the design and administration of benefit programs engender the difficulty.

Third, it must be recognized that disabled persons deserve as a social right (equal to income maintenance) access to rehabilitation service. To make it meaningful requires that rehabilitation service should begin immediately. The major emphasis should go to recovery, not toward establishment of the right to a cash settlement.

Fourth, our social security structure should assure all disabled persons decent income maintenance for themselves and their families. Rehabilitation cannot proceed on the quicksands of inadequate income.

LEGISLATIVE NEWS

Editorial note: Here is news of congressional action to continue training programs and a summary of information and opinions about training needs and expenditures drawn from a variety of sources.

THE CONGRESS views with some degree of urgency the extension of the Titles I and II Traineeship Programs. This obviously was a factor in the House Subcommittee's decision to push H.R. 6325, the bill by Congressman Roberts of Alabama, to accomplish this. The House of Representatives passed this bill under a suspension of the rules and the Senate acted with comparable alacrity to assure the continuance of these training programs. The extension is for a period of five years, but the authorizations still do not call for any specific annual amounts to be appropriated. A request for supplemental appropriations for 1960 will unquestionably be approved by Congress prior to adjournment later this summer.

Despite the fact that there were no amendments to the law authorizing these activities, the Senate Committee on Labor and Public Welfare, in urging the continuation of these programs, was critical of the administration of the program for advanced training of professional nurses and recommended some changes in the future conduct of the program. The Senate criticism centered on the fact that the traineeships were, for the most part, awarded to students in courses leading to a master's degree and a few to students completing work leading to a baccalaureate degree. The report further stated that the Senate had expected a considerable portion of the funds to be used for traineeships in short, noncredit-granting courses of from one to six months which would qualify nurses to fill certain supervisory and administrative positions in hospitals. The report further expressed the hope that short-term courses would be developed and that nurses would be encouraged to enroll in such courses, whether offered by academic schools of nursing, by hospital schools of nursing, or by a combination of institutions. Obviously the Senate committee believes that the 1959 appropriation of $6,000,000 for advanced nurse training was adequate to implement recommendation No. 8 made by the Surgeon General's Evaluation Conference on the Professional Nurse Traineeship Program.

Title I support for the training of public health workers is now authorized for the coming five years. The question of adequacy of training to meet personnel needs and the methods whereby these needs can be met remain in large measure unanswered. The new and challenging public health problems the nation is facing today call for a greater number of well trained public health personnel, but we will not contribute to the preparation of these workers with a policy of hopeful inactivity.

The federal program of aid to schools of public health is authorized for only one more year and is woefully inadequate financially to meet even current training needs. Training programs by state and local departments of public health vary widely due to the availability of funds for training purposes. At the present time there is not even a semblance of a coordinated training program for the basic corps of public health workers, such as public health nurses and sanitation specialists, comprising 43 per cent of persons employed by state and local public health departments. In order to provide training for adequate numbers of public health workers we need additional training facilities at al-

ready established schools of public health and new schools of public health.

Data relative to the source of funds for training purposes are both illuminating and discouraging. Over the past few years a combination of annual Public Health Service and Children's Bureau grants for training, supplemented by state and local appropriations for this purpose, has ranged from only $1,750,000 in 1947 to $3,400,000 expended for this purpose in 1957. The percentage of the total funds expended annually which were derived from state and local sources was as low as 22 per cent in 1948 and has never exceeded the 32 per cent allocated from these sources in 1950 and 1956. The federal share during this period has never been less than 68 per cent and reached 78 per cent in 1948. A new high of $4,355,382 was expended in 1958 for the training of public health workers. Of this amount 35.5 per cent was derived from state and local sources and 64.5 per cent from PHS and Children's Bureau funds. To the previously mentioned training funds a total of five million dollars was added in 1957 to 1959 through the provisions of Title I traineeship grants. It is interesting to note that in 1958 the National Institutes of Health expended over $39,000,000 for research fellowships and training.

Many are convinced that a phenomenal increase in the training of public health workers is vital to continued and expanded public health programs throughout this nation. Although the House decided against taking action on a more comprehensive training bill at this time, the House Committee nevertheless stated that it would give separate consideration to other bills, including H.R. 6871, which are still pending before the committee and which deal with other aspects of public health training. The wealth of information available to document the personnel deficiencies currently existing in present-day public health programs, plus those only shortly ahead of us, must be made available to the appropriate congressmen and senators who must make this decision. The APHA with its overriding interest in all areas of public health matters has agreed to act as the catalyst around which the various special interests can combine in what is hoped will be an effective educational campaign. Any successful campaign to provide federal funds for training to state and local health departments must have the support of state health officers and state and local public health workers. Federal aid in the training of public health nurses and of engineers must have the stamp of approval of these specialties. Schools of public health have already demonstrated their willingness and ability to present their needs before Congress. Unification of all the several interests into a coordinated, well planned, and well timed effort is essential to the successful realization of these goals.

The dangers inherent in any attempt to use this space to provide up-to-date legislative news are graphically illustrated by the postscript we must add to the report in the June APHA Journal on proposed amendments to the Public Health Service Act to provide for public health training programs. The very day the Journal was delivered to the APHA's Washington office the House Committee on Health and Safety, which was considering this matter, decided to take no action on this bill during this session of the Congress. Such occurrences are not unusual and it is hoped that in the future APHA members will take into consideration the necessary time lag between the preparation of material for the Journal and its publication.

ASSOCIATION NEWS

87th ANNUAL MEETING
HOW TO MAKE HOTEL AND MOTEL RESERVATIONS FOR THE ATLANTIC CITY MEETING

A HOUSING BUREAU will be operated by the Atlantic City Convention Bureau. Since all requests for rooms will be handled in chronological order, you are urged to send in your reservation as quickly as possible. (Map showing location of hotels and motels and reservation form appear on page 1088.)

HOTELS AND RATES*

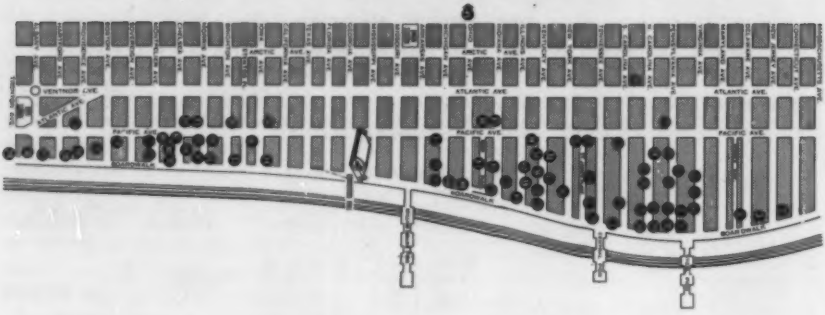
Map No.	Hotels	Rooms with Bath Single	Rooms with Bath Double	Two Rooms—One Bath 2 Persons	Two Rooms—One Bath 3 Persons
10	Abbey	$7.00– 8.00	$8.00–12.00		
57	†Ambassador	8.00–18.00	10.00–22.00	$20.00	
1	Breakers	4.00– 7.00	7.00–18.00	8.00	$13.00–20.00
20	Carolina Crest	6.00– 7.00	8.00–11.00		
16	Chalfonte		10.00–17.00		22.00
43	†Claridge	9.00–15.00	13.00–19.00		
13	Colton Manor		12.00–16.00		15.00
29	Columbus		8.00		
44	Crillon	10.00	11.00–12.00		
50	†Dennis	7.00–11.00	10.00–24.00	20.00	20.00
46	Eastbourne	6.00– 8.00	9.00–11.00	14.00	16.00
28	Flanders	7.00– 8.00	9.00–12.00	12.00	15.00
9	Holmhurst	5.50	8.00	10.00	12.00
36	Jefferson	7.00	9.00–10.00		
37	Kentucky		7.00– 8.00		12.00
18	†Lafayette	10.00	12.00	16.00	18.00
40	†Madison	6.00– 8.00	8.00–14.00		12.00–16.00
67	Mark	5.00– 7.00	6.00–10.00		
48	†Marlborough–Blenheim	9.00–11.00	12.00–20.00	15.00–18.00	18.00–21.00
26	Mayflower	6.00– 8.00	8.00–14.00		
32	Monticello	5.00	7.00	10.00	12.00
4	Morton	6.00– 8.00	9.00–12.00		
25	New Belmont	4.00– 5.00	6.00–10.00		13.00
24	New Drake	6.00	7.00–10.00	12.00	14.00
64	Old English		10.00–12.00		
22	†Penn-Atlantic	4.00	7.00		11.00
77	†President	7.00–12.00	10.00–20.00		
33	Richfield–Boscobel	4.00– 6.00	6.00– 8.00		
47	Runnymede		7.00–10.00		
2	St. Charles	10.00	12.00–14.00		
7	†Seaside	7.00–10.00	10.00–18.00		21.00
23	†Senator	8.00–14.00	12.00–18.00	16.00–20.00	20.00–24.00
51	†Shelburne	8.00–22.00	10.00–22.00		21.00–27.00
54	†Sheraton Ritz–Carlton	8.00–10.00	10.00–20.00		
35	Sterling	5.00– 6.00	8.00–10.00	9.00–10.00	12.00

* The above rates are subject to 3% Municipal Tax. † Suites available.
Some Hotels and Motels may require a deposit.

MOTELS AND RATES*

Map No.	Motels	Rooms with Bath Single	Rooms with Bath Double	Map No.	Motels	Rooms with Bath Single	Rooms with Bath Double
60	Algiers		$10.00–12.00	27	Mayflower		8.00–14.00
12	Aristocrat		10.00–18.00	76	Monte Carlo Beach	6.00	10.00
63	Baronet		8.00	14	Monterey		10.00–12.00
21	Carolina Crest		10.00–14.00	75	Nautilus		10.00–12.00
62	Castle Roc		12.00–16.00	3	Ocean View		6.00–10.00
39	Continental		10.00–14.00	78	President		12.00–20.00
17	Coronet	$10.00	12.00–16.00	49	River Edge		8.00
56	Diplomat		10.00–14.00	11	Sahara	8.00	10.00–12.00
58	Dunes	8.00–10.00	12.00–16.00	5	St. Morits		10.00–12.00
45	Eastbourne		12.00–16.00	53	Saxony		12.00–14.00
55	Eldorado		12.00–14.00	68	Sea Isle	6.00	8.00–12.00
52	Empress	10.00	10.00–22.00	8	Seaside	10.00	12.00–16.00
30	Envoy	7.00– 9.00	8.00–12.00	71	Seville	10.00	12.00–16.00
69	John's	6.00	8.00–12.00	38	Sorrento	8.00–10.00	12.00–16.00
66	†LaConcha	12.00	12.00–16.00	73	Strand of Atlantic City	6.00– 9.00	9.00–12.00
34	Lombardy		10.00–18.00	74	†Sun 'n Sand		12.00
70	Malibu	8.00	10.00–16.00	19	Tides	10.00	12.00–14.00
61	†Mardi Gras	10.00	10.00–14.00	72	Tropicana		10.00–12.00
65	Martinique		10.00–12.00				

Street Plan of Atlantic City Showing Location of Convention Hall and Housing Bureau Hotels and Motels



APHA HOTEL/MOTEL RESERVATION FORM

MAIL TO:

Housing Bureau
16 Central Pier
Atlantic City, N. J.

.....1959
(Date)

Please make the following reservation:

Hotel.....First Choice

Hotel.....Second Choice

Hotel.....Third Choice

..... Single Room/bath for ..... person(s). Rate $..... to $..... per room

..... Double Bedroom/bath for ..... person(s). Rate $..... to $..... per room

..... Two Rooms/1 bath for..... person(s). Rate $..... to $..... per room

Single rooms are limited; please arrange for sharing twin-bedroom if possible

Arrival..... 1959

Departure..... 1959

The names and addresses of all persons who will occupy the room(s) requested must be listed. Please be sure to indicate arrival and departure hours and dates. If you wish to cancel or make any change in your reservation, write to the Housing Bureau, and **NOT** the hotel to which you were assigned.

....
....
....
....

Name of Applicant.....

Street..... City..... Zone..... State.....

Note: You will receive confirmation direct from the hotel.

NEWS OF AFFILIATED SOCIETIES AND BRANCHES

APHA Affiliated Societies and Branches

Society and Secretary

ALABAMA PUBLIC HEALTH ASSOCIATION, Ralph Roberts, State Health Dept., Montgomery
ARIZONA PUBLIC HEALTH ASSOCIATION, J. Rex James, Maricopa County Health Dept., Phoenix
ARKANSAS PUBLIC HEALTH ASSOCIATION, Mrs. Vada Russell, State Health Dept. Bldg., Little Rock
CALIFORNIA, NORTHERN, PUBLIC HEALTH ASSOCIATION, Almira Kutzer, 6 Crest Ave., Pt. Richmond
CALIFORNIA, SOUTHERN, PUBLIC HEALTH ASSOCIATION, Dorothea Hansen, City Health Dept., Los Angeles 12
COLORADO PUBLIC HEALTH ASSOCIATION, Alice de Bruyn Kops, 4660 S. Delaware, Englewood
CONNECTICUT PUBLIC HEALTH ASSOCIATION, Shirley Thayer, R.N., 61 Arnold Way, West Hartford 7
CUBAN PUBLIC HEALTH SOCIETY, Dr. Raphael Calvo Fonseca, Calle 19 No. 511 Altos Vedado, Havana
FLORIDA PUBLIC HEALTH ASSOCIATION, Nathan J. Schneider, Ph.D., P. O. Box 210, Jacksonville
GEORGIA PUBLIC HEALTH ASSOCIATION, Carl Fox, 33 Pryor St., N.E., Atlanta
HAWAII PUBLIC HEALTH ASSOCIATION, Alison MacBride, R.N., 510 S. Beretania St., Honolulu 13
IDAHO PUBLIC HEALTH ASSOCIATION, Charles Hammond, P. O. Box 640, Boise
ILLINOIS PUBLIC HEALTH ASSOCIATION, William J. Hixon, Evanston Health Dept., Evanston
INDIANA PUBLIC HEALTH ASSOCIATION, Gale E. Coons, State Board of Health, Indianapolis
IOWA PUBLIC HEALTH ASSOCIATION, Lloyd Coe, Iowa Hospital Association, 1012 Liberty Bldg., Des Moines
KANSAS PUBLIC HEALTH ASSOCIATION, W. W. Wilmore, Kansas Tuberculosis and Health Assn., 1134 Topeka Ave., Topeka
KENTUCKY PUBLIC HEALTH ASSOCIATION, Peggy Fisher, 620 S. Third St., Louisville 2
LOUISIANA PUBLIC HEALTH ASSOCIATION, Lucille Godelfer, State Dept. of Health, New Orleans 7
MARYLAND PUBLIC HEALTH ASSOCIATION, Lillian B. Davis, Sc.D., Department of Education, Baltimore
MASSACHUSETTS PUBLIC HEALTH ASSOCIATION, Mrs. Elizabeth K. Caso, Dept. of Health, Cambridge
MICHIGAN PUBLIC HEALTH ASSOCIATION, Marjorie Delavan, 1517 West St. Joseph St., Lansing
MINNESOTA PUBLIC HEALTH CONFERENCE, D. S. Fleming, M.D., State Dept. of Health, University Campus, Minneapolis
MISSISSIPPI PUBLIC HEALTH ASSOCIATION, H. E. Boone, P. O. Box 1700, Jackson
MISSOURI PUBLIC HEALTH ASSOCIATION, Mrs. Nadia Craver, 5th Fl., State Office Bldg., Jefferson City
MONTANA PUBLIC HEALTH ASSOCIATION, Thomas S. Willett, Montana Public Health District 1, Hardin
NEBRASKA PUBLIC HEALTH ASSOCIATION, Emily Brickley, 1004 Capitol Bldg., Lincoln
NEW MEXICO PUBLIC HEALTH ASSOCIATION, Daniel T. Marley, P. O. Box 8066, Albuquerque
NEW YORK CITY, PUBLIC HEALTH ASSOCIATION OF, Frances Ann McVey, 4317 Robinson St., Flushing 55, N. Y.
NEW YORK STATE PUBLIC HEALTH ASSOCIATION, Mrs. Kathleen Boland, Rensselaer County Health Dept., Troy
NORTH CAROLINA PUBLIC HEALTH ASSOCIATION, R. W. Brown, Bucombe County Health Dept., Asheville
NORTH DAKOTA PUBLIC HEALTH ASSOCIATION, Jean E. Norton, R.N., Box 133, Bismarck
OHIO PUBLIC HEALTH ASSOCIATION, Mrs. June O'Donnell, 3516 Braddock St., Dayton
OKLAHOMA PUBLIC HEALTH ASSOCIATION, Marjorie Butler, 3400 North Eastern, Oklahoma City
OREGON PUBLIC HEALTH ASSOCIATION, Russell E. Lee, P. O. Box 231, Portland 7
PENNSYLVANIA PUBLIC HEALTH ASSOCIATION, Emma J. Petach, R.N., 324 N. Second St., Harrisburg
PUERTO RICO PUBLIC HEALTH ASSOCIATION, Mrs. Mae de Acin, Apartado 211, San Juan 2
SOUTH CAROLINA PUBLIC HEALTH ASSOCIATION, Mrs. Laura M. DeMarse, State Health Dept., Columbia
SOUTH DAKOTA PUBLIC HEALTH ASSOCIATION, Alice Brady, R.N., State Dept. of Health, Pierre
TENNESSEE PUBLIC HEALTH ASSOCIATION, C. B. Tucker, M.D., State Dept. of Health, 420 Sixth Ave., N., Nashville
TEXAS PUBLIC HEALTH ASSOCIATION, Joseph N. Murphy, Jr., State Dept. of Health, Austin
UTAH PUBLIC HEALTH ASSOCIATION, Katherine Brandon, M.D., P. O. Box 25, Foothill Station, Salt Lake City
VIRGINIA PUBLIC HEALTH ASSOCIATION, Mrs. Helen W. Wiesmann, 1220 E. Broad St., Richmond
WASHINGTON STATE PUBLIC HEALTH ASSOCIATION, Tom Drummey, State Dept. of Health, Smith Tower, Seattle
WEST VIRGINIA PUBLIC HEALTH ASSOCIATION, Paul B. Shanks, State Health Dept., Charleston
WISCONSIN ASSOCIATION FOR PUBLIC HEALTH, Paul Weis, 1 W. Wilson St., Madison
MIDDLE STATES BRANCH, APHA, Thelma Luther, Dept., of Health, Des Moines, Iowa
SOUTHERN BRANCH, APHA, Guy Tate, Jr., Jefferson County Health Dept., Birmingham, Ala.
WESTERN BRANCH, APHA, Robert G. Beaumier, c/o Executive Office, 760 Market St., San Francisco 2, Calif.

55th New York Health Conference

The 55th Annual Health Conference held at Lake Placid, N. Y., May 25 to 28, combined meetings of the New York State Public Health Association and several related organizations. More than 1,600 delegates registered.

The first general session was devoted to both national and state public health problems. Leona Baumgartner, M.D., New York City commissioner of health and president, APHA, in "Our 1959 World," shared with the group many of the similarities and differences in public health she had found overseas, particularly in India and Russia. The Honorable Malcolm Wilson, lieutenant governor, outlined some of the health plans of Governor Rockefeller. These include finishing the fight against tuberculosis, control of radiation hazards and air pollution, narcotic addiction and alcoholism control, stepped-up research,

rehabilitation, training and recruitment of public health specialists, and closing the gap between knowledge and its application.

In "How Public Health and Medicine Work Together," the theme of Henry I. Fineberg, M.D., president-elect of the State Medical Society, was that preventive and curative medicine cannot be separated and that private practice and public health need each other. He praised the many avenues for cooperation that had been opened by Herman E. Hilleboe, M.D., state health commissioner. The latter concluded this session in "Patterns of Public Health," in which he reviewed briefly and graphically the momentous changes in today's world, the cloth out of which public health is tailored. Among numerous quotable things, he said: "It is an unforgivable bit of sloppy thinking to imagine that any problem will yield to the panaceas of a single-viewpoint solution. This modern world demands of us a kind of two-valued toughness; we must be courageous enough to retain the values of our professional discipline, yet we must be hard-headed and practical enough to recognize that problem solving on a team basis holds the best final hope of achieving social goals. . . . We will begin to marshal the skill and insight of judicial experts, legislators, sociologists, anthropologists, engineers, meteorologists and a host of other specialists. In the process we will soon discover that the framework of modern public health services must encompass an area of human endeavor as big as life itself." (The last three of these addresses were distributed and may still be available from the State Health Department.)

A second general session was devoted to a panel on "Changes and Trends in Schools of Public Health," led by four deans: Ray E. Trussell, M.D., John C. Snyder, M.D., Ernest L. Stebbins, M.D., and Ira V. Hiscock, Sc.D., of Columbia, Harvard, Johns Hopkins, and Yale, respectively, and a group of interrogators representing a local health department, public health nursing, and training officers of the state health department. Among the trends noted were plans for training geared to the needs of those who teach public health and preventive medicine. Because of the great variety of training levels of students there is increasing use of the tutorial method and of programs individually designed. Side by side with this approach are the large seminars for exposing the various disciplines and levels of training to each others problems and ideas. Finally there is an increasing tendency to restrict the M.P.H. degree to the medically trained person.

Dr. Hilleboe announced the establishment of an "Empire State Award for Excellence in Medical Reporting," sponsored on behalf of the State Health Department by the New York Health Conference, Inc., and the State Medical Society. First presentation of the award will be made at the 1960 Health Conference.

Technical sessions were also held by the nine sections of the NYPHA. Edward Wellin, Ph.D., field director, Study of Behavioral Sciences in Public Health, and Francis B. Elder, engineering associate, of the Association staff, spoke before the Behavioral Sciences and Sanitation Sections, respectively.

The Hermann M. Biggs Memorial Award was presented to Evan W. Thomas, M.D., until his retirement in 1958 associate public health physician for venereal diseases in the State Health Department's Bureau of Epidemiology and Communicable Disease Control. He was also a consultant to both the World Health Organization and the Public Health Service.

Officers of NYPHA elected are:

President: Walter C. Levy, M.D., assistant director, Local Health Services, State Department of Health

President-Elect: V. J. Sallak, executive secre-

tary, Buffalo and Erie County Tuberculosis Association

Vice-Presidents: Marion L. Henry, assistant commissioner for administration, State Health Department

Ruth E. Rives, acting director, Public Health Nursing, State Department of Health

Secretary: Kathleen S. Boland, M.S.P.H., director of health education, Rensselaer County Health Department

Treasurer: Eugene J. Cahalan, administrative officer, Division of Laboratories and Research, State Department of Health

Representative to Governing Council of APHA: Meredith Thompson, Dr. Eng., director, Bureau of Environmental Sanitation, State Department of Health.

Three P's in the Arizona Affiliate

"People, Pennies, and Public Health" was the theme of the 1959 meeting of the Arizona Public Health Association in Tucson, April 22-24. The meeting was planned to get an understanding of current public health problems and programs in relation to the rapid growth of population, to bring out community feelings about the state's health problems and programs, and to give citizens and professionals an opportunity to air and resolve their differences in solving health problems. Participants met in discussion groups where they had an opportunity to react to keynote speeches and to put questions to the panelist experts.

The keynote speaker on the theme was the director of the State Health Department's Bureau of Vital Statistics, Melvin R. Wise. The leaders of two panels on the subject were Emil Palmquist, M.D., San Francisco regional officer of the Public Health Service, and Cliff Lander, health educator of the Indian Health Area Office in Phoenix. In each instance the panelists included community and public health representatives.

Another general session panel, keynoted by George W. Marx, director, Bureau of Sanitation, State Health Department, and moderated by the department's local health administrator, Frank R. Williams, addressed itself to "The Community Looks at Environmental Sanitation." Here agriculture, industry, management, labor, local health administration, and tax research each had a voice. If the local press report of the session is any guide, Arizona is much in need of a more extensive environmental sanitation program, that is "packaged" with a medical program by the State Health Department for effective selling to the various community agencies.

Annie Wauneka, a Navajo Indian, was presented a plaque of distinction as "the outstanding worker in public health in Arizona in 1959." Earlier in the year she had been named "Woman of the Year" by the Arizona Press Women's Association. She is a member of the Surgeon General's advisory board, Division of Indian Health, a member of the Committee on Tuberculosis in Indians of the National Tuberculosis Association, and broadcasts on the Navajo Hour over a Gallup, N. M., station.

Program co-chairmen were Frank R. Williams and John H. Nelson, director of health education in the State Health Department. Retiring president was Keith T. Maddy, D.V.M., public health veterinarian, State Department of Health. New officers are:

President: H. G. Crecelius, Ph.D., director of laboratories, State Health Department

President-Elect: George W. Marx

Vice-President: John H. Nelson

Treasurer: Emma Gupton, State Health Department

Secretary: Rex James, State Health Department.

A Varied Program at Kansas Meeting

Staph infections and their control, the recurring volume of venereal diseases, housing, school sanitation, geriatrics, and the local picture were all viewed by the Kansas Public Health Association, meeting in Hutchinson on April 22-24.

W. G. Simpson, M.D., assistant chief of the Venereal Disease Branch of the Public Health Service, supplemented the Kansas situation with information of a shocking national increase in venereal disease particularly among teenagers. He urged increased VD education, case finding, and examination and treatment of contacts.

Evalyn Gendel, M.D., reported on the development of guides for school health inspections and the first year of statewide effort in school inspections. Hygiene standards have been set up and school building standards are in prospect.

In the Nursing Section meeting, Harry Allen, M.D., assistant director of the state's Division of Aging, in a paper on "New Trends in Geriatrics," urged a new attitude about "growing old." Today's 65-year-old can well be creative, efficient, and productive. This program was in harmony with Governor Docking's proclamation of April as "Senior Citizens Month."

At the annual Samuel J. Crumbine dinner "Special Service Awards" were presented to two State Health Department employees for "faithful and meritorious service to public health." They are Bertha Campbell, the state department's first full-time health educator and serving since 1936, and Melvin O. Johnson, local sanitarian, for his effective training of other sanitarians in food and drug inspection work.

H. G. Wagenblast, M.D., health officer of Saline County, succeeded Samuel W. Hoover, sanitarian of the Geary County Health Department, in the presidency. Other new officers are:

President-Elect: A. F. Schaplowsky, director of health education services, State Board of Health

Vice-President: James L. Henderson, sanitarian, District No. VI, State Health Department

Secretary-Treasurer: Waldo W. Wilmore, executive secretary, Kansas Tuberculosis Association.

Nearly 400 at Missouri Meeting

The keynote address at the 33rd annual meeting of the Missouri Public Health Association was on "The Future of Public Health as it Relates to the Practicing Physician." Wilson T. Sowder, M.D., Florida state health officer, said there was no reason for conflict between the practicing physician and the public health officers. He cited their joint concern and planning in chronic diseases, medical and health problems of the aging, and in mental health, as examples. The presidential address of J. Paul Guidry, D.D.S., practicing dentist, expanded on the theme, pointing out the need for the team work of physician, dentist, and public health officer in stimulating the public in healthful individual and community living.

Berwyn F. Mattison, M.D., executive director of the APHA, closed the final general session with greetings from President Leona Baumgartner, M.D., and the Executive Board. Today's new public health problems mean "a shift from short-term to long-term planning," said he.

At the annual banquet, the W. Scott Johnson Annual Award "to the person making the most outstanding contribution to public health in the State during the year" was presented to a veteran of more than a quarter of a century in the State Health Department, L. M. Garner, M.D., director of the section on local health services.

The newly elected officers are:

President: Robert L. McNamara, Ph.D., University of Missouri

President-Elect: W. G. Green, Missouri Heart Association

Vice-President: Albert W. Happy, State Division of Health, Jefferson City

Secretary-Treasurer: Nadia Craver, State Division of Health (reelected).

Utah Meets in Salt Lake City

As the Utah Public Health Association wound up its annual meeting, May 4-5,

there was a general feeling that it had been one of the most interesting in years. Contributing to its success were discussions by both local and national public health figures.

Glen Leymaster, M.D., chairman, Department of Preventive Medicine, University of Utah, and recently returned from two years in Thailand, presented slides of that country and discussed them in relation to its public health problems.

Robert Dyar, M.D., president, Western Branch, emphasized the need for state health departments to assume a role of leadership in planning public health programs. Specific ways in which they might do this are presentation of demonstration programs and new technics and public health research. Dr. Dyar noted a trend in local health departments to offer family-centered programs rather than individual services. Providing there is a well defined and well placed responsibility for leadership, this type of program delimits the number of health personnel entering a home. He further emphasized the health department's responsibility to organize local resources for meeting local health needs.

Malcolm H. Merrill, M.D., president-elect, APHA, in discussing "What's New with the Nation's Health Program," named several factors that necessitate a change: the new industrial revolution, changing age distribution of the population, mobility of population, pressure on national resources, and air pollution. He believes that the public is now willing to give additional funds for health, when specific programs are designed to solve specific health problems.

A panel discussion on "Where Are We Going in Mental Health Services for Children?" was moderated by Paul Rasmussen, M.D., Department of Pediatrics, University of Utah. Panel members included representatives from education, crippled children's services, psychiatry, and public welfare.

Newly elected officers are:

President: Elton Newman, M.D., College of Medicine, University of Utah, Salt Lake City

President-Elect: Delmar Stone, health educator, Salt Lake City Health Department

Vice-President: Ruth Ann Purhonen, executive director, Salt Lake Area Mental Health Association

Secretary-Treasurer: Kathryn M. Brandon, M.D., medical director, Salt Lake City Schools.

Virginia Has an Evening Meeting

The Virginia Public Health Association was able to contain its 1959 annual meeting in a single dinner and evening session in Roanoke on May 5. In her address at the dinner Leona Baumgartner, M.D., president of the American Public Health Association, urged the affiliate to expect and thus create leadership and a sense of excellence.

An award citation was given to William A. Dorsey, chief of the Bureau of Laboratories, Richmond Department of Health, and outgoing secretary of VPHA. The presentation was made by Dwight W. Hussey, director of laboratories, Portsmouth Health Department.

Thomas D. Lewis, sanitarian, State Health Department, was succeeded in the presidency by James M. Suter, M.D., assistant director, Local Health Services, State Health Department.

Other officers are:

President-Elect: William A. Dorsey

Vice-President: A. Clarke Slaymaker, chief sanitarian, Alexandria Health Department

Secretary: Helen W. Wiesmann, assistant professor, Public Health Nursing, Medical College of Virginia

Treasurer: Archer D. Farmer

Representative to APHA Governing Council: David B. Wallace, D.D.S., director, Division of Dental Health, State Health Department.

American Public Health Association membership application blank on page XXXI

EMPLOYMENT SERVICE

Annual Meeting Employment Service

An employment center will be located in the exhibit area at the 87th Annual Meeting. See the official program at the meeting for exact location. The service will be sponsored by the New Jersey State Employment Service with the assistance of the Massachusetts, New York, and Pennsylvania State, and the District of Columbia Employment Services, all affiliated with the U. S. Employment Service, and the Association. Professional personnel will be available to assist employers and employees. Vocational counseling will also be available. Binders containing copies of applications and position descriptions will be available for inspection by applicants and employers who have registered with the service.

Employers and candidates are urged to file beforehand. This should be done through either your local state employment service office or the Association. The required forms will be available at both places. Filing by October 2 is necessary if records are to be forwarded to the meeting. It will be possible to register at the meeting also.

A conference room will be available at the center for use by employers and applicants. Early registration will facilitate appointment arrangements.

The following pages present information for those seeking public health personnel and for those seeking positions in public health. Other information concerning vacancies and personnel available is on file in the Association office. Anyone wishing to have the benefit of this additional information can obtain it by writing to the Vocational Counseling and Placement Service of the Association.

Advertising space in these pages is available at special rates for the use of employers or individuals. The charges are $5 for the first 50 words or fraction thereof and $1 for each additional 10 words or fraction thereof. There is no charge to members or Fellows of the Association who desire to utilize the **Positions Wanted** portion of these pages. **Closing date** for receipt of advertisements is the first of the month preceding the desired month of publication. **All correspondence should be sent to the American Public Health Association, 1790 Broadway, New York 19, N. Y.**

POSITIONS AVAILABLE

Public Health Medical Officer II (Director, School Health Services)—$909-$1,105. M.D. and at least two years' experience or one year graduate public health work required. Must have or be eligible for California license to practice medicine. Paid vacation and sick leave, part-paid health insurance, other benefits. County Personnel, Ground Floor, Courthouse, San Bernardino, Calif.

Medical Health Officer—for Las Animas-Huerfano Health Department offices in Trinidad, Colo. This is an established unit with qualified personnel. Salary starts at $11,000. Address inquiries to Dalton Roberts, Chief, Administrative Services, Colorado State Department of Public Health, 420 State Office Bldg., Denver 2, Colo.

Medical Health Officer—for established rural county health department in central Illinois. Good personnel policies with vacation and retirement. Salary range $9,600-$12,000 for physician with public health training and experience. Contact W. T. Douglas, M.D., Hillsboro, Ill.

Senior Industrial Hygiene Physician—$9,104-$10,874. Two vacancies in New York City office of the New York State Department of Labor. Civil service examination on October 17, 1959, open to qualified United States citizens. Requires possession of or eligibility for New York State medical license; graduation from approved medical school and completion of satisfactory internship; one year full-time practice as physician. In addition candidates must have either (a) one year of experience as industrial plant physician, physician in an occupational disease clinic, or as a public health physician; or (b) completion postgraduate course in public health (including a course in industrial hygiene) or industrial medicine, of one academic year in residence approved by New York State Public Health Council; or (c) one year full-time

medical research experience in industrial employment conditions or industrial health hazards. For further details and application write to Recruitment Unit, Box 94, New York State Department of Civil Service, State Campus, Albany 1, N. Y.

Associate Industrial Hygiene Physician—$11,152-$13,162. One vacancy in New York City office of the New York State Department of Labor. Civil service examination on October 17, 1959, open to qualified United States citizens. Requires possession of or eligibility for New York State medical license; graduation from approved medical school and completion of satisfactory internship; three years' full-time practice as a physician, including one year of full-time industrial medical practice. In addition candidates must have either (a) one year of experience as industrial plant physician, physician in an occupational disease clinic, or as a public health physician; or (b) completion postgraduate course in public health (including a course in industrial hygiene) or industrial medicine, of one academic year in residence approved by New York State Public Health Council; or (c) one year full-time medical research experience in industrial employment conditions or industrial health hazards. For further details and application write to Recruitment Unit, Box 95, New York State Department of Civil Service, State Campus, Albany 1, N. Y.

Assistant Public Health Director—for Arlington County, Va. Entrance salary $10,500 a year. United States citizenship and eligibility for a license to practice medicine in Virginia required. Training or experience in public health administration desirable. Age to 50. Apply Arlington County Personnel Department, Court House, Arlington, Va.

AN OVERSEAS ASSIGNMENT

will give you the greatest challenge of your career.

If you are a **physician, nurse, or sanitary engineer** educated, trained, and experienced in public health, the U. S. Point Four programs need your services. Pay is commensurate with your experience and education. Posts are in the underdeveloped areas of the world.

Send your curricula vitae to the Public Health Division, Box PH-3, International Cooperation Administration, Washington 25, D. C.

Director, Local Health Services, Wisconsin—Work with the state health officer and professional staff in improvement of local health services. M.P.H. degree and eligibility for license to practice medicine in Wisconsin required. Salary $1,012-$1,247, commensurate with experience. Write E. H. Jorris, M.D., Assistant State Health Officer, 400 State Office Bldg., Madison 2, Wis.

Supervising Public Health Nurse II—$460-$559. In desert area, start $507. Graduation from nursing school, two years' study in public health nursing, some training in theory and practice of supervision, two years' experience, and California registration. Paid vacation and sick leave, part-paid health insurance, other benefits. County Personnel, Ground Floor, Courthouse, San Bernardino, Calif.

Public Health Nurse—$417-$507. In desert area, start $460. Must be eligible for California registration. Paid vacation and sick leave, part-paid health insurance, other benefits. County Personnel, Ground Floor, Courthouse, San Bernardino, Calif.

Public Health Nurses—$395-$489. Close to beach and recreational areas; three weeks' vacation, 11 holidays. Requires eligibility for California nurse's registration, California public health nurse certificate, and California driver's license. Apply Orange County Personnel Department, 801-C North Broadway, Santa Ana, Calif.

Public Health Nurse—Immediate opening in eastern Idaho near Yellowstone Park, Teton mountains and Jackson Hole, Wyo. Large recreational area nearby with boating, waterskiing, etc. Opportunity for program development in an urban-rural area. Close to a college. Beginning salary is $340 a month for a public health nurse with a college degree or one academic year of public health nursing background. Address inquiries to Dr. Terrell O. Carver, Administrator of Health, State House, Boise, Idaho.

Public Health Nurse, Staff Duty—for family-centered program in a university community. Salary range $4,200-$6,000. Liberal personnel policies. Retirement plan and Social Security. L. L. Fatherree, M.D., Public Health Director, Champaign-Urbana Public Health District, Champaign, Ill.

Public Health Nursing Positions—available in combination health department and visiting nurse service. Public health nursing preparation required. Generalized service. Agency in a university community. Beginning salary $4,468-$4,914, depending on education and experience. Social Security. Please write Miss Patricia Walsh, Nursing Director, Washtenaw County Health Department, County Bldg., Ann Arbor, Mich.

Public Health Nursing Position—available in long established health department. Generalized service. Department located in a progressive industrial city. Many cultural and recreational advantages. Beginning salary $4,030-$4,882, depending on preparation and experience. Public health preparation required. Liberal vacation, sick leave, Social Security. Write to Nursing Director, Calhoun County Health Department, 96 E. Jackson St., Battle Creek, Mich.

Public Health Nurses—with beginning salaries of $4,160, $4,550, $4,888, depending on qualifications, with merit increases, longevity rates, liberal sick and retirement benefits. New air-conditioned building. Contact Flint Civil Service Commission, Municipal Center, Flint 2, Mich.

Executive Director—Visiting Nurse Association, generalized program, including diagnostic chest clinics, nine-nurse staff. Supervisory experience in a VNA and degree required. Salary open, depending on qualifications. Write Mrs. William J. Wilson, President, Visiting Nurse Association, 2332 Pacific Ave., Atlantic City, N. J.

Nurse Director—of department of public health services. R.N. with a B.S. degree, M.A. desirable. At least five years' supervisory and administrative experience. To direct a public health nursing service, an outpatient department with 28 clinics, and a department of physical medicine. Liberal personnel policies. Salary open. Apply Administrator, Englewood Hospital, Englewood, N. J.

Public Health Nursing Supervisor—for a staff of seven health department nurses and three instructive visiting nurses for Charlottesville and Albemarle County, Va. Beginning salary $400 per month. Pleasant working conditions and excellent community. Write S. D. Sturkie, M.D., P. O. Box 159, Charlottesville, Va.

Consultant Nurse in Pediatric Nursing—Position available in West Virginia State Health Department. Master's degree in pediatric nursing; four years' experience in nursing, of which a minimum of two years was in a supervisory, teaching or consultant capacity; one year of nursing experience which included major responsibility in pediatric nursing. Salary range $4,920-$5,880. Position under merit system. For further information write to Director, Bureau of Public Health Nursing, West Virginia State Health Department, 1800 E. Washington St., Charleston 5, W. Va.

Public Health Nursing Consultant (Assistant to Director of Public Health Nursing in State Health Department)—Give consultation to public health personnel in all phases of public health nursing, including in-service education; prepare manuals, guides, etc., for public health nurses; assist in administration of program. Bachelor's degree in public health nursing minimum preparation; master's degree desirable; four years' experience in public health nursing, including two in administration or supervision. Salary: start at $6,744; maximum $8,064. Civil service; vacation; sick leave; Social Security and retirement benefits. Write Miss Ione M. Rowley, R.N., Director, Public Health Nursing, 119 Monona Ave., Madison 3, Wis.

Public Health Nurse—$4,836-$6,036. Generous fringe benefits, including paid sick leave, three-week vacation, medical plan, Social Security plus local retirement plan. Fresno County is in the heart of California's rich San Joaquin Valley in close proximity to both mountains and ocean. Located midway between San Francisco and Los Angeles, the 330,000 county population includes 125,000 in the city of Fresno. Requires California registered nurse license and California public health certificate. Provisional appointment pending receipt of California license and PHN certificate. Apply Edward W. Firby, Director of Personnel, Fresno County Civil Service, Room 101, Hall of Records Bldg., Fresno, Calif.

Public Health Nurse III (District Advisory Nurse)—Give guidance and counseling to all public health nurses in a multiple county area regarding community organization and relationships, program planning, public health nursing technics, records and reporting. Is responsible for inservice education program for local public health nurses and evaluation of nursing services. Salary range, $5,664-$6,744, plus travel allowance. B.S. degree with major in public health nursing; and three years' generalized experience as a public health nurse. Special requirement: registration or eligibility therefor as a registered nurse in Wisconsin; certification or eligibility for certification as a public health nurse in Wisconsin. Write R. J. Siesen, Personnel Officer, State Board of Health, Madison 2, Wis.

City-County Health Director—City and County of Eau Claire, Wis. Open to non-medical persons with degree in public health followed by two years of experience in a public health agency. Salary $6,500-$8,125, depending on qualifications. Write Personnel Officer, City Hall, Eau Claire, Wis., for application and further information.

Sanitary Engineer (Public Health)—Starting salary $7,627; maximum salary $9,359. City of Rockford, Ill. (population 118,000). For application write City of Rockford Civil Service Commission, 126 S. First St., Rockford, Ill.

Engineer—Public health experience desirable but not required. County health department in rapidly growing Chicago suburbs. Starting salary to $6,000, plus car allowance. Excellent retirement plan, Blue Cross, three weeks' vacation. DuPage County Health Department, 209 E. Liberty Dr., Wheaton, Ill.

Senior Public Health Engineer—to assume full charge of environmental sanitation program, county unit. Requirements: state profesional engineering license or eligibility, academic degree in sanitary engineering, two to five years of experience, according to educational qualifications. Salary $8,000. Write Columbia County Department of Health, 363 Allen St., Hudson, N. Y.

Sanitary Engineer—to direct division of sanitation with generalized program in well established county health department. Population 82,000. Liberal vacation, sick leave, retirement, longevity benefits. Salary $6,564-$7,620. Cattaraugus County Health Department, 302 Laurens St., Olean, N. Y.

Registered Sanitarian — Butte County, Calif. Salary $391-$486. Beginning salary can be $436 based on qualifications and experience. Requires valid registered sanitarian certificate in the state of California. For further information contact Arnold W. Brockmole, M.D., Director, Butte County Health Department, P. O. Box 1100, Chico, Calif.

Health Educator—for the Colorado State Health Department offices in Denver, Colo. Position under merit system. Salary starts at $442, with maximum of $572 per month. Write to Dalton Roberts, Chief, Administrative Services, Colorado State Department of Public Health, 420 State Office Bldg., Denver 2, Colo.

Health Educator—for well established county health department in central Illinois. Estimated population 90,000. Salary open. Apply: W. J. Broad, M.D., Director, 318 E. Locust St., Bloomington, Ill.

Health Educator—Progressive health department in rural area. Work in all phases of health education, plus administration. Salary $5,076-$5,784; hospitalization and retirement plans; liberal vacation and sick leave; car furnished for official business. Qualifications: M.P.H. or M.S.P.H., plus experience. Write Ian D. McLaren, M.D., Commissioner, Cattaraugus County Health Department, Box 573, Olean, N. Y.

Public Health Microbiologist—$417-$516. To work in modern laboratory. Liberal benefits. Three weeks' vacation. Requires California public health microbiologist certificate and dairy bacteriologist certificate. Apply Orange County Personnel Office, 801-C N. Broadway, Santa Ana, Calif.

Medical Social Work Consultant—$483-$587. Completion of two-year postgraduate social work course and either one year experience in hospital, clinic, or health department, or two years' medical or psychiatric social work experience. Paid vacation and sick leave, part-paid health insurance, other benefits. County Personnel, Ground Floor, Courthouse, San Bernardino, Calif.

Medical Social Consultants—Two positions in comprehensive programs of maternal and child health and crippled children. Connecticut State Department of Health. (1) Consultation with some direct casework in a geographical area. (2) Mental retardation clinic and program in New Haven. Graduate training with two years' experience required. Salary range from $5,100-$5,820. Write Louis Spekter, M.D., Director, Bureau of Maternal and Child Hygiene, Connecticut State Department of Health, Hartford 15, Conn.

Medical Social Work Consultant III—for programs in tuberculosis and chronic disease. Salary range $6,389.28-$8,164.08 Minimum requirements: Full graduate training with emphasis on medical or psychiatric social work and two years of experience in the social work program of a hospital or other health facility. All Michigan Civil Service benefits. Apply Frank B. Krupiarz, Personnel Officer, Michigan Department of Health, Lansing 4, Mich.

Assistant County Health Officer—San Francisco Bay Area. To direct major program or geographical division of expanding health department. $1,048-$1,155/month. Requires California medical license plus three years' public health experience or two years' experience plus one year graduate study. Alameda County Civil Service, 188 12th St., Oakland 7, Calif.

Industrial Hygiene Engineer—$641-$779. Engineering degree and three years' experience in industrial sanitation and/or air pollution. Must have experience and ability to develop complete program. **Director of Statistics**—$641-$779. College graduate and four years' highly responsible experience in statistical and record work in public health. Must have experience and ability to develop program. Arizona Merit System, 11 North 17th Ave., Phoenix, Ariz.

Executive Director—Combined public health nursing agency. Education and experience in public health nursing, including supervisory experience. Have well qualified health officer. Salary open. Five-day, 40-hour week. Month vacation and liberal personnel policies. Capital city, population 216,000. Public Health Nursing Association, Des Moines, Iowa. Write Mrs. J. R. McNerney, Personnel Committee, 521 16th St., West Des Moines, Iowa.

POSITIONS WANTED

On Box Numbers, Address APHA at 1790 Broadway, New York 19, N. Y.

Administrative, Academic and/or Research Position—Male, 45, married, M.D., M.P.H. Twenty years' clinical experience; ten years' experience in public health administration, especially maternal-child health, crippled children, school health. Seven years' teaching experience, three years' hospital administration experience. Interested in comprehensive medical care programs. Prefer southern or mid-southern states. Available at three months' notice. **Box PH-91,** Employment Service, APHA.

Health Laboratory Chief—F.A.P.H.A.; Ph.D., bacteriology; M.S.P.H. Desire position in the west or mid-west. Twenty years of broad public health laboratory experience at technical and supervisory levels; some university teaching. **Box L-70,** Employment Service, APHA.

School Health Administrator—Ed.D., M.S.P.H. Experienced all phases school health education and administration, and related college and university teaching. Author of leading professional and school textbooks. Desire to teach any phase of school health in a ranking college, university, or school of public health. **Box C-48,** Employment Service, APHA.

Epidemiologist—M.D., M.P.H., age 32, multilingual. Desires position in research or the field in the United States or overseas. **Box PH-92,** Employment Service, APHA.

Commercial Advertisements

All communications on the following commercial advertisements should be sent to Burneice Larson, Medical Bureau, Suite 605, 900 North Michigan Avenue, Chicago 11, Ill.

OPPORTUNITIES AVAILABLE

(a) Welfare medical director to be administratively responsible for the policy standards and procedures of the medical program and who has an interest in the administrative aspects of medicine; university city; important medical center; East. (b) Director student health service; liberal arts college with some 34 departments; position offers advantages of regular hours, opportunity to work with pleasant group of people; ten-month year; West. (c) Research associate; preferably person who would be responsible for gathering information on studies to improve administrative practices in hospitals; university medical center; Midwest. (d) Professional director; important position with nationally known organization, one of the leading in America; large staff of physicians, public health and hospital workers in various fields; East (e) Public health nurses: (1) Instructor-supervisor, Africa, Asia, South America; $7,000-$10,000; maintenance, travel expenses; some work with natives; (2) Executive director; VNA near Chicago; combined program; $8,000; (3) Chief nurse; county-voluntary agency; ideal California location; $7,200-$9,000.

BOOK REVIEWS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

THE ECOLOGY OF THE MEDICAL STUDENT. Report of the Fifth Teaching Institute, Association of American Medical Colleges—Edited by Helen Hofer Gee and Robert J. Glaser. Evanston, Ill.: Association of American Medical Colleges (2530 Ridge Ave.), 1958. 262 pp. Price, clothbound $3.00, paperbound $2.00.

Each year since 1951 the Association of American Medical Colleges has held a conference on some aspect of medical education. The first two concerned the teaching of psychiatry and preventive medicine. In 1953 the pattern was crystallized into the present arrangement of formal teaching institutes held during the week preceding the Association's annual meeting. The institutes of 1953, 1954, and 1955 were concerned with the teaching of the basic sciences, and the one in 1956 with the appraisal and selection of medical school applicants. The present volume is the report of the proceedings of the Fifth Teaching Institute on the Ecology of the Medical Student held in October, 1957, and it is fascinating reading to anyone with an interest in medical education. The institute brought together medical school deans and faculty members, sociologists, psychologists, psychiatrists, and educators and included formal papers and informal discussions.

The material is organized into four parts: the characteristics of medical schools and medical students with emphasis on diversity and its implications; factors affecting medical students, both curricular and noncurricular, and including material on counseling; sociological contributions to the study of the medical student; and educational patterns in medicine with special consideration of the several newer approaches now in experimental stages in the United States as well as a chapter on British patterns of medical education. There are 20 authors in all, 11 chapters, an appendix, 148 tables, and 40 figures. The editors have done an excellent job of reporting and coordinating discussions which were most wide-ranging in subject matter.

The reader is particularly impressed with two things in reading this report. The first is the conscientious, careful, profound and continuing self-examination which is taking place among medical educators. The second striking impression concerns the extent to which medical education is calling upon other disciplines, particularly the behavioral sciences, in its self-evaluation, in the selection of medical students, and in instructional programs.

This is required reading for all who are interested in medical education. It is recommended reading for others who may be interested in the forces at work in the development of the physicians of the future. It is also an illustration of an enlightened way in which a group of professional schools can approach a study of their common problems and concerns. ROBERT E. COKER, JR.

TUBERCULOSIS: PREVENTION AND CONTROL—By H. W. Hetherington and Frannie W. Eshleman. New York, N. Y.: Putnam's (210 Madison Ave.), 1958. 404 pp. Price, $6.50.

This is the fourth edition of an excellent textbook on tuberculosis written for students of nursing. It is comprehensive and the material is well organized. The book begins with a history of tuberculosis and discusses the etiology, pathology, and clinical aspects in simple, understandable language. The rationale

and organization of the tuberculosis control effort are presented in detail, particularly as they are related to nursing.

There are a few faults. The most notable omission is failure to present the problem of radiation hazard as it applies to diagnostic radiology, particularly x-ray surveys. The devotion of 17 pages of the text to the subject of pneumothorax and pneumoperitoneum and only one page to pulmonary resection apparently reflects an interest in the historical aspects of various forms of treatment rather than in the practical importance of present-day usage and may give an erroneous impression to the student.

Referring to the control of hemoptysis, the statement is made that "Some physicians order calcium by mouth with the object of decreasing blood coagulation time." This is certainly true. It is also true that such practice is quackery. The book is too fine a presentation to permit inclusion of any statement (made even in a reportorial vein as this is) which might detract from the very favorable impression conveyed.

This text is highly recommended to the student interested in the nursing aspects of tuberculosis and, indeed, might be read very profitably by those lay persons interested in the tuberculosis control movement. JOSEPH STOCKLEN

INDUSTRIAL SOCIETY AND SOCIAL WELFARE. THE IMPACT OF INDUSTRIALIZATION ON THE SUPPLY AND ORGANIZATION OF SOCIAL WELFARE SERVICES IN THE UNITED STATES— By Harold L. Wilensky and Charles N. LeBeaux. New York, N. Y.: Russell Sage Foundation (505 Park Ave.), 1958. 401 pp. Price, $5.00.

The theme of this book is succinctly stated: ". . . the technicological changes of industrialization lead to changes in the structure of society; these societal changes in the context of American culture produce or intensify concern about certain social problems, which creates a demand for welfare services; the supply takes the form of social agencies, public and private, manned by professional social workers and other welfare specialists." Written by a sociologist and a social worker with sociological training, this volume is the outgrowth of a report prepared for the Eighth International Conference of Social Work.

The book comprises three parts: The first deals with the culture of capitalism and with the impact of industrialization on social structure. Ample consideration is given to such massive changes in American society as the concentration of people in metropolitan centers, the creation of a large, mobile labor force, specialization, large-scale organization and stratification, and to the social problems which they determine or create. Part two discusses the types of service in relation to various features of industrialism and consequent social changes. Finally, part three analyzes the internal organization of the services and how this affects their operation. Welfare services are provided by specialized agencies operated by specialized occupational groups. This involves a discussion of the social agency and the profession of social work. Attention is given to the elements of similarity and difference between the structure of social work and other professions. Bureaucracy and power structure are considered in connection with the social agency.

While this book aims to be useful to students and practitioners of social work, its value is not limited to these groups. All health workers will have much to learn from it. This is the kind of study that will be found useful in trying to understand problems of old age, delinquency, the operation of voluntary agencies, and many other problems of concern to community health workers. Finally, this book illustrates the utility of applying historical and sociological approaches to current problems.

GEORGE ROSEN

NUTRITION FOR YOU—By Robert S. Goodhart. New York, N. Y.: Dutton (300 Fourth Ave.), 1958. 215 pp. Price, $4.50.

In general, this book is disappointing. Witticisms lighten the content, but the drive for popularity is too obvious, and soundness of subject matter is jeopardized. Is it justifiable to devote a third of the text to food tables which can be obtained readily and less expensively from other sources? Twelve pages or 10 per cent of the narrative text on "how to freeze food" leaves the reviewer figuratively cold. The pharmaceutical flavor of the text will be distasteful to those who question the universal need for daily vitamin supplementation. The recommended use of calorie tables for weight-losers is challenged. The principle is sound but the practice subject to nutritional error. The protein, mineral, and vitamin content of food should also be considered when selecting the total calories for the day, and a method for doing this should be built into the calorie-guide.

Sections of each of the eight chapters are useful and well expressed. The reader, if a homemaker, will be entertained and enlightened. The professional worker should know that this is not a complete text on nutrition and, therefore, not a source book.

ELIZABETH K. CASO

PRINCIPLES AND TECHNICS OF REHABILITATION NURSING—By Florence J. Terry; Gladys S. Benz; Dorothy Mereness; and Frank R. Kleffner. St. Louis, Mo.: Mosby (3207 Washington Blvd.), 1957. 345 pp. Price, $5.50.

This book is an excellent textbook for students of nursing, physical and occupational therapy, social work, etc. It contains portions which might be of equal interest and use to other hospital and community health agency workers; such as, the sections dealing with the rehabilitation of the child, speech problems, the care and training of paralytics and amputees.

The book is made up of well-organized units on the meaning and place of rehabilitation, the nurse's role and responsibility in same, and rehabilitation in special conditions or situations. The unit bibliographies are reasonably comprehensive and are up-to-date in most areas.

The text, although somewhat repetitious of the generally accepted salient points of rehabilitation nursing, is clearly and simply stated making for easy reading. It could be used profitably in conjunction with basic nursing textbooks.

Worthy of particular mention are the positive and practical suggestions for the nurse's participation in the health re-education of the handicapped to live with what is left, rather than joining the patient in mourning that which is lost.

RUTH M. FARRISEY

RELAX AND FEEL BETTER—A Book and Record Course Consisting of an Illustrated Manual and Two High Fidelity 33⅓ RPM Records. Karin Roon. New York, N. Y.: Crown Publishers (419 Fourth Ave.), 1959. Price, $5.95.

This course in "complete relaxation" consists of two, 10-inch 33⅓ rpm records, plus a 32-page illustrated manual, and is a program of instruction in breathing, body movements, and posture. Miss Roon feels that the de-emphasis on physical activity brought about by modern living conditions is a cause contributing to nervous tension, headaches, fatigue, and lack of general well-being. The course describes technics for relaxation through controlled respirations, yawning, stretching movements of the extremities and neck, and proper bending and postural adjustment. It is suggested that the course be taken over a period of four weeks and that the experience thus gained be applied thereafter.

RADIOACTIVITY MEASURING INSTRUMENTS—By M. C. Nokes. 75 pp. Price, $4.75.

A GUIDE TO NUCLEAR ENERGY—By R. F. K. Belchem. 77 pp. Price, $3.75. New York, N. Y.: Philosophical Library (15 East 40th St), 1958.

The first of these books deals with simple types of instruments which can be made in most ordinary laboratories. After an introduction, which mentions some of the units in radioactivity measurement, it devotes chapters to Geiger-Muller Counters, G.-M. tubes, Trigger Devices, Power Supplies, Rate Meters and Scalers. A knowledge of physics and electricity is necessary for the person who is to make the best use of this volume.

The second book attempts to explain to persons with limited technical knowledge how nuclear reactors function. It gives a brief outline of some basic facts of nuclear fission and then devotes the rest of the volume to the nuclear reactor, including a general description of the more important types now being constructed or studied. The final chapter mentions several useful applications of radiation, including a few which may be foreseen in the future.

RECENT ADVANCES IN PAEDIATRICS—Edited by Douglas Gairdner. Boston, Mass.: Little, Brown (34 Beacon St.), 1958. 378 pp. Price, $9.50.

Both this second edition and the first edition published in 1954 were printed in Great Britain and are primarily the works of British authors. This volume covers advances made in 11 major areas of the medical and surgical aspects of pediatrics. In two of the areas, physical growth and the nephrotic syndrome, the material represents contributions of authors from the United States (Louisville, Ky., and Philadelphia, Pa.). In the other areas, those of changes in circulation at birth, the hematology of infancy, jaundice in the newborn, hypothyroidism, spina bifida and hydrocephalus of infancy, tuberculosis, rheumatic fever, the deaf child, and osteomyelitis, outstanding authorities from London and Scotland are used. The material is well illustrated and for the most part, extensive and fairly recent bibliographies are furnished. A Spanish translation of the first edition is available. The chapter on tuberculosis by F. J. W. Miller is of special public health interest.

INSECTICIDE RESISTANCE IN ARTHROPODS—By A. W. A. Brown. World Health Organization publication. New York, N. Y.: Columbia University Press (2960 Broadway), 1958. 244 pp. Price, $5.00.

The appearance, history, and geographical distribution of arthropod resistance to insecticides is discussed on the basis of information gleaned from 625 published references and much unpublished information. The four chapters are: nature and characterization of resistance, taxonomic groups characteristically vectors to man, the housefly, and taxonomic groups characteristically not vectors to man. Approximately 800 reference are given.

ANTIBIOTICES MONOGRAPHS NOS. 8, 9, AND 10:

CHLOROMYCETIN (CHLORAMPHENICOL)—By Theodore E. Woodward and Charles L. Wisseman, Jr. 159 pp.

PENICILLIN—By Harold L. Hirsh and Lawrence E. Putnam. 148 pp.

STREPTOMYCIN AND DIHYDROSTREPTOMYCIN—By Louis Weinstein and N. Joel Ehrenkranz. 116 pp.

New York, N. Y.: Medical Encyclopedia (30 East 60th St.), 1958. Each book, $4.00.

These are three of a current series of Monographs dealing with some of the prominent antibiotics of today. Each deals with the historical, microbiological, pharmacological, and therapeutic aspects. Each one considers the types of infections for which it is especially useful. Side effect, resistance, etc., are also mentioned.

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ADOPTION OF CHILDREN. Evanston, Ill.: American Academy of Pediatrics, 1959. 60 pp. Price, $1.00.

AGED HOME CARE PATIENTS IN NEW YORK CITY. Housing and Related Facilities Needed. Albany, N. Y.: State Division of Housing, Bureau of Research and Statistics, 1958. 42 pp.

BARBITURATE WITHDRAWAL SYNDROME, THE. Munke Hertel Wulff. Copenhagen, Denmark: Ejnar Munksgaard, 1959. 173 pp. Price, da.dr. 28.00.

BIOLOGY OF THE AMOEBA, THE. Annals of the New York Academy of Sciences, Vol. 78, Art. 2. Henry I. Hirshfield, et al. New York, N. Y.: The Academy, 1959. pp. 401-704. Price, $4.50.

CARE OF THE PATIENT WITH A STROKE. Genevieve Waples Smith. New York, N. Y.: Springer, 1959. 148 pp. Price, $2.75.

CATALYTIC MODELS IN EPIDEMIOLOGY. Hugo Muench. Cambridge, Mass.: Harvard University Press, 1959. 110 pp. Price, $4.50.

CHEMISTRY AND TECHNOLOGY OF CEREALS AS FOOD AND FEED, THE. Samuel A. Matz. Westport, Conn.: Avi Publishing Co., 1959. 732 pp. Price, $15.00.

CHILD WELFARE: PRINCIPLES AND METHODS. Dorothy Zietz. New York, N. Y.: Wiley, 1959. 384 pp. Price, $5.50.

DDT—THE INSECTICIDE DDT AND ITS SIGNIFICANCE. Vol. II—Human and Veterinary Medicine. Edited by S. W. Simmons. Basel, Switzerland: Birkhauser AG, 1959. 570 pp. Price sFr. 66.—.

DEMOGRAPHIC YEARBOOK 1958. United Nations. New York, N. Y.: Columbia University Press, 1959. 541 pp. Price, clothbound, $8.00; paperbound, $6.50.

EFFECTIVE SCHOOL HEALTH EDUCATION. Arthur L. Harnett and John H. Shaw. New York, N. Y.: Appleton-Century-Crofts, 1959. 421 pp. Price, $4.75.

ELEMENTARY DECISION THEORY. Herman Chernoff and Lincoln E. Moses. New York, N. Y.: Wiley, 1959. 364 pp. Price, $7.50.

ELEMENTARY STATISTICS WITH APPLICATIONS IN MEDICINE AND THE BIOLOGICAL SCIENCES. Frederick E. Croxton. New York, N. Y.: Dover Publications, 1959. 376 pp. Price, $1.95.

EVOLUTION OF NERVOUS CONTROL. Allan D. Bass. Washington, D. C.: American Association of Science, 1959. 240 pp. Price, $5.75. AAAS Members, $5.00.

EXPERIMENT PERILOUS. Renee C. Fox. Glencoe, Ill.: Free Press, 1959. 262 pp. Price, $5.00.

FACTS ON THE MAJOR KILLING AND CRIPPLING DISEASES IN THE UNITED STATES TODAY. New York, N. Y.: National Health Education Committee, 1959. Price, $5.25.

FAMILIES IN TREATMENT. Erika Chance. New York, N. Y.: Basic Books, 1959. 234 pp. Price, $5.50.

FOOD VALUES IN SHARES AND WEIGHTS (2nd ed.). Clara Mae Taylor. New York, N. Y.: Macmillan, 1959. 116 pp. Price, $4.00.

GROUND WATER HYDROLOGY. David K. Todd. New York, N. Y.: Wiley, 1959. 336 pp. Price, $10.75.

HEALTH IN THE MEXICAN-AMERICAN CULTURE —A COMMUNITY STUDY. Margaret Clark. Berkeley, Calif.: University of California Press, 1959. 253 pp. Price, $5.00.

HEMATOPOIETIC MECHANISMS. Annals of the New York Academy of Sciences, Vol. 77, Art. 3. New York, N. Y.: The Academy, 1959. 820 pp. Price, $5.00.

HISTORY AND TRENDS OF PROFESSIONAL NURSING (4th ed.). D. M. Jensen; J. F. Spalding; and E. L. Cady, Jr. St. Louis, Mo.: Mosby, 1959. 610 pp. Price, $5.25.

HOME CARE AND HOUSING NEEDS OF THE AGED. A Report on a Study for the New York State Division of Housing. John G. Steinle and Associates. Albany, N. Y.: State Division of Housing, 1958. 60 pp.

INTERNATIONAL WORK IN BILHARZIASIS 1948-1958. World Health Organization. New York, N. Y.: Columbia University Press, 1959. 58 pp. Price, $.40.

MAGIC YEARS, THE. Selma H. Fraiberg. New York, N. Y.: Scribner's, 1959. 305 pp. Price, $3.95.

MANAGEMENT OF ORAL DISEASE, THE (2nd ed.). Joseph L. Bernier. St. Louis, Mo.: Mosby, 1959. 875 pp. Price, $15.00.

MENTAL HEALTH MANPOWER TRENDS. Joint Commission on Mental Illness and Health. Monograph Series No. 3. George W. Albee. New York, N. Y.: Basic Books, 1959. 361 pp. Price, $6.75.

METHODS OF GEOGRAPHICAL PATHOLOGY. Report of the Study Group, The Council for International Organizations of Medical Sciences established under the joint auspices of UNESCO and WHO. Edited by Richard Doll. Springfield, Ill.: Thomas, 1959. 72 pp. Price, $2.50.

MICROBIOLOGY YESTERDAY AND TODAY. Edited by Vernon Bryson. New Brunswick, N. J.: Rutgers University, Institute of Microbiology, 1959. 122 pp. Price, $4.00.

MUNICIPAL YEAR BOOK 1959. Edited by Orin F. Nolting; Davis S. Arnold; and John J. Hunnewell. Chicago, Ill.: International City Managers' Association, 1959. 606 pp. Price, $10.00.

NARCOTICS—LINGO AND LORE. J. E. Schmidt. Springfield, Ill.: Thomas, 1959. 199 pp. Price, $4.25.

NEW PSYCEIATRY, THE. Nathan Masor. New York, N. Y.: Philosophical Library, 1959. 155 pp. Price, $3.75.

NOTES OF A SOVIET DOCTOR. G. S. Pondoev. New York, N. Y.: Consultants Bureau, 1959. 238 pp. Price, $4.95.

NURSING AND MANAGEMENT OF SKIN DISEASES, THE. D. S. Wilkinson. New York, N. Y.: Macmillan, 1959. 288 pp. Price, $5.75.

OUTLINE OF HISTOLOGY (4th ed.). Margaret M. Hoskins and Gerrit Vevelander. St. Louis, Mo.: Mosby, 1959. 112 pp. Price, $4.75.

PREVENTIVE MEDICINE. Herman E. Hilleboe and Granville W. Larimore. Philadelphia, Pa.: Saunders, 1959. 731 pp. Price, $12.00.

PRINCIPLES OF RADIATION DOSIMETRY. G. N. Whyte. New York, N. Y.: Wiley, 1959. 124 pp. Price, $7.00.

PROCEEDINGS OF THE 8TH ANNUAL CONFERENCE OF THE INSTITUTE OF PUBLIC ADMINISTRATION OF CANADA, 1956. Edited by Philip T. Clark and F. J. McGilly. Toronto, Canada: University of Toronto Press, 1958. 343 pp. Price, $6.00.

PSYCHOTHERAPY AND SOCIETY. W. G. Eliasberg. New York, N. Y.: Philosophical Library, 1959. 223 pp. Price, $6.00.

PUBLIC HEALTH AND SOCIAL SCIENCE. C. Vijil. Copenhagen, Denmark: Ejnar Munksgaard, 1959. 77 pp. Price, da.kr. 12.50.

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SOCIAL WORK IN TUBERCULOSIS. Margaret Coltart; Helen Raine; and Elizabeth Harrison. London, England: The Chest and Heart Association, 1959. 144 pp. Price, $3.00.

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VOLUNTARY MEDICAL INSURANCE IN CANADA 1957—SUMMARY DATA. Health Care Series No. 11. Ottawa, Canada: Research and Statistics Division, Department of National Health and Welfare, 1959.

WELFARE SERVICES IN A CANADIAN COMMUNITY. D. V. Donnison. Toronto, Canada: University of Toronto Press, 1959. 200 pp. Price, $5.95.

WORKING MAN'S WIFE. Lee Rainwater; Richard P. Coleman; and Gerald Handel. New York, N. Y.: Oceana Publications, 1959. 238 pp. Price, $7.50.

YOUR MIND CAN MAKE YOU SICK OR WELL. Curt S. Wachtel. New York, N. Y.: Prentice-Hall, 1959. 244 pp. Price, $4.95.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

Raymond S. Patterson, Ph.D., F.A.P.H.A.

More About Live Vaccines—Two reports—one of a controlled study, the other of a broader field experience in an epidemic—demonstrate the safety and immunizing efficacy of living, attenuated poliovirus used as a prophylactic. By now, this is familiar news.

BARR, R. N., et al. Use of Orally Administered Live Attenuated Poliovirus as a Vaccine in a Community Setting (and) ADAB-GOMEZ, H., et al. Community-wide Vaccination Program with Attenuated Poliovirus in Andes, Columbia. J.A.M.A. 170, 8:893 (June 20), 1959.

Why We Don't Use BCG—Just about everything that can be said in disparagement of BCG vaccination seems to have been marshalled by the 17 American authors of this leading paper of a British Medical Journal. Among BCG's many faults is this important one: "Numerous values of the tuberculin test in diagnosis, epidemiology, etc., are lost to persons whose tissues have been sensitized to tuberculoprotein by BCG." Despite the number and warmth of the arguments the leading editorial in the same issue suggests that authorities in other parts of the world will not be completely convinced.

ANDERSON, A. S., et al. The Case Against BCG. Brit. M. J. 5135:1423 (June 6), 1959.

For Health Officers Only—"Federal, state and local boards of health should inform every physician of the danger of choanal atresia. When the cause of death by suffocation has been proved to be choanal atresia, it should be reported as such so that a proper tabulation of its incidence, which does not exist at the present time, can be made."

BEINFIELD, H. H. Ways and Means to Reduce Infant Mortality Due to Suffocation. J.A.M.A. 170, 6:647 (June 6), 1959.

Teaching by Looking—In an editorial introduction to a symposium on health exhibitions you will find this returned spectator's often repeated question; "why don't we have the same in . . .?" If you have, yourself, substituted the name of your city or state or our country for that blank in the query, then you should be helped perhaps by the papers to find your own particular answer. Whether or not you have doubts or convictions you will find most of the wide-ranging papers well worth your while.

CHAVE, S. P. W. Producing an Exhibition (and a half dozen related papers). Health Ed. J. 17, 2:94 (May), 1959.

Working Together—You will probably pigeonhole this item under "of general interest," for it surely is of slight immediate utility to working sanitarians in this land of rugged individualism. The paper describes in detail three Coventry (England) health centers where general medical practitioners, MCH'ers, school health workers, et al., carry on their several activities under one roof, to the benefit of each professional group as well as their beneficiaries.

CLAYTON, T. M. Conjoint Clinics and a New Health Centre at Coventry. M. Officer 101, 22:301 (May 29), 1959.

Safe at Home—To be added to the several American studies of hospital outbreaks of staphylococcus infection is this account of a similar tragedy in a 72-bed maternity "home" in England. Again, the suggestion is made that "fit" mothers

be sent home after three days to be cared for by peripatetic midwives. The usual measures—sterilizing blankets, oiling floors, training the staff, etc.,—will not quickly abolish sepsis the author warns.

COLES, R. B. Observations on a 12-month's Survey of Staphylococcal Sepsis in a Maternity Home. Pub. Health 73, 8:285 (May), 1959.

The Lab to the Fore—The public health angle of this medical paper is that effective medical treatment of ominous staphylococcal pneumonia depends upon prompt and good laboratory work because treatment means selecting the right antibiotic quickly. The disk-sensitivity method for naming the culprit is practical and extremely useful.

EDE, S. Staphylococcic Pneumonia. J.A.M.A. 170, 6:638 (June 6), 1959.

Commended to You—This nontechnical discussion of the mechanics and interpretive values of the tuberculin tests, written for nurses by the medical director of the NTA, will be found useful in clearing the air by all nonmedical public health people (and possibly by some medical readers of this quaint column). The author reports on research studies of PPD and points out that the Mantoux test when used with precision will increase effectiveness while cutting costs of screening programs.

FELDMANN, F. How to Use the Tuberculin Test. Am. J. Nursing 59, 6:856 (June), 1959.

Enlightened Age?—Only one in four Americans drinks fluoridated water and the proportion of those lacking this benefit increases—despite the fact that 1,778 communities now do have controlled fluoridation and another 1,903 places have naturally fluoridated water. The alternatives proposed by the antifluoridationists (avowed or secret) to undermine intelligent community action are disposed of in part three of the tripartite call to arms.

FLEMMING, A. S., et al. Fluoridation. Pub. Health Rep. 74, 6:511 (June), 1959.

Added Health Test—It is suggested here that serum cholesterol level measurement be added to the battery of routine tests to be employed in periodic health examinations—as an indication of a predisposition to atherosclerosis. Researchers find that this test furnishes as much information as other more elaborate and expensive procedures for measuring lipoprotein levels.

MATTINGLY, T. W., et al. Lipid Studies in Health and Disease. J.A.M.A. 170, 5:536 (May 30), 1959.

New Days—New Ways—"In too many instances we in public health are losing the confidence of our community patient because we are still 'program peddling' and practicing traditional public health in an era of scientific public health. The transition is slow but inexorable. Communities, like individuals, are learning to want a scientific diagnosis before treatment is started . . . and want proof that the treatment . . . is producing results . . . and is worth the cost."

MCGAVRAN, E. G. The Promise of Public Health. Canad. J. Pub. Health 50, 5:197 (May), 1959.

Light Touch—Yes, even public health can be funny! If you think it cannot be, then hunt out this "Guide for Kids." To be sure, if the guide had been addressed to American children a lot of folks in our insulted local chambers of commerce would be demanding the head of the perpetrator of these sharp digs. If you'll read the paper you'll end sighing for an American Hugh Paul.

PAUL, H. Where to Be Ill. M. Officer 101, 19:261 (May 8), 1959.

Cancer Causes—Here are eminently practical discussions by four top-notch researchers on these aspects of cancer causation: inhalants (mostly tobacco); ionizing radiations (mostly x-ray); present concern about viruses; and possible urinary metabolites. Though the down-

to-earth talks were addressed to practicing physicians they should be digestible by nonmedical workers in the field of chronic diseases.

RHOADES, C. P., et al. Some Present Concepts of Carcinogenesis. New York State J. Med. 59, 11:2154 (June), 1959.

Warning—Eviscerating chickens can be an occupational hazard. Of 109 workers in six Connecticut poultry-processing plants, 16 reacted serologically to psittacosis tests. Four flocks were later identified as probable contributors of the infection to employees in some of the plants.

RINDGE, M. E., et al. Serologic Evidence of Occupational Psittacosis in Poultry Plant Workers. New England J. Med. 260, 24:1214 (June 11), 1959.

Matter of General Information—This is only obliquely a concern of public health practice, but you should know, if you don't, that amphetamine in large doses really does improve athletic performance—as rumor long has had it. Giving the drug is not according to Hoyle and neither is it good for the athletes.

SMITH, G. M., and BEECHER, H. K. Amphetamine Sulfate and Athletic Performance. J.A.M.A. 170, 5:542 (May 30), 1959.

Pioneering Venture—This novel program for supplying qualified homemaker service through sponsoring local (county) agencies will be of immediate interest to all in public health. A state health department division and the state university offer a training course to selected homemaker candidates. Their job is to step in to the breach when an emergency upsets a family's domestic equilibrium. How the plan evolved, and ways adopted since to keep it going should be understood, and it is to be hoped, emulated.

STANFORD, M. R. Homemaker Service in New Jersey. Pub. Health Rep. 74, 5:383 (May), 1959.

"Water, Water Everywhere"—Problems of adequate public water supplies can never become foreign to the concerns of any of us in public health, however, little each may have to do with this most basic community facility. So this brief but revealing discussion of an important AWWA committee report will help you to appreciate the magnitude of the present water supply problem.

WOLMAN, A. Philosophy of Water Works Management. J. Am. Water Works A. 51, 5:555 (May), 1959.

If additional information is desired regarding the articles listed in this bibliography, please communicate directly with the publications in which they appeared; the addresses are furnished for your convenience.

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M. Officer (Medical Officer), Chronicle House, 72-78 Fleet St., London, E.C.4, England.
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NEWS FROM THE FIELD

WHO News

12th World Health Assembly

More than 300 delegates from 88 member and associate member states of WHO and 51 associated organizations participated in the 12th World Health Assembly, meeting in Geneva, May 12-30. On the basis of Director General M. G. Candau's report and the recommendation of the Committee on Program and Budget, an effective working budget of $16,918,700 for 1960 was adopted. This represents an increase of 11 per cent over the 1959 budget. Of the total, $500,000 is earmarked to undertake the intensified program of international medical research decided upon by the Assembly.

Leroy Burney, Surgeon General of the U. S. Public Health Service and president of the 11th Assembly, presided at the opening session, making a special plea for favorable consideration of the proposal for an International Health Year. Sir John Charles, chief delegate of the United Kingdom and chief medical officer, British Ministry of Health, was elected to succeed Dr. Burney. Vice-presidents are Dr. B. El-Azmeh of the United Arab Republic, Dr. V. Marinesco of Romania, and Dr. Ourot Souvannavong of Laos. New Zealand's Dr. H. D. Turbott is chairman of the Committee on Program and Budget, Dr. O. Vargas-Mendes, Costa Rica, of the Committee on Administration, Finance, and Legal Matters.

UN General Secretary Dag Hammarskjold, at the opening session, said in part: "In the modern world the great problems of disease, malnutrition, ignorance, and poverty are so closely linked that none of them can be tackled separately. . . . Your practical work . . . is of major assistance in the attainment of that improved human well-being which is one of the main purposes proclaimed by the United Nations Charter."

A Pakistan proposal to postpone the International Health Year recommended by the UN General Assembly was voted. However, an amendment sponsored by Norway and Yugoslavia was adopted. This provides for further consideration by the 13th World Health Assembly.

It was decided to proceed with first steps for construction of a headquarters building in Geneva. For this purpose the Swiss Confederation and the Canton of Geneva have offered to provide the site and assist in financing with loans of nearly seven million dollars.

Arising out of the indicated 1960 crisis in funds for the world-wide malaria eradication program, a resolution urged further government contributions to the Malaria Eradication Special Account. It also invited special contributions from foundations, industry, labor organizations, and individuals. Henry van Zile Hyde, M.D., assistant to the Surgeon General for international health, USPHS, and representative of the WHO Executive Board at the Assembly, reported that seven million dollars would be needed for the program in 1960. Total contributions since the program was started in 1955 have been $8,400,000, of which 90 per cent has been contributed by the United States.

By acclamation and unanimously Dr. Candau was invited to accept a renewal of his contract for three years following the present expiration date of July, 1960.

A further resolution called for a "spearhead program" to provide safe and adequate water supplies to communities throughout the world, not only because of the basic public health importance of community water supplies but to free women from their "virtual enslavement" resulting from the labor of drawing water and transporting it for

a long distance. "A small pipe, one inch in diameter, will deliver in a day, without human effort, as much water as can be carried by 150 women working steadily for eight hours. Even in the most advanced countries there are still great deficiencies."

The Darling Foundation Medal and Prize was awarded to Dr. E. J. Pampana, retired, who in 1957 became the first director of WHO's Malaria Eradication Program, after having been chief of the Malaria Section since 1948. Dr. Pampana is a former assistant and lecturer in the Institute of Hygiene in the University of Rome. No Leon Bernard Prize was awarded this year.

The subject of the technical sessions at the Assembly was "Health Education of the Public." Delegates to the Assembly, representatives of nongovernmental agencies associated with UN, and other interested persons participated in the two days of discussions, carried on both in plenary sessions and in 14 smaller groups. Robert Yoho, an official United States delegate and director of health education, Indiana Department of Health, led one of these groups. Helen Martikainen, Sc.D., and Jerome Peterson, M.D., both on the WHO staff, were in charge of planning the program of the technical discussions. Significantly each senior staff member of WHO, including Director-General M. G. Candau, attended the plenary sessions.

Mayhew Derryberry, Ph.D., chief of the health education branch, USPHS, served as consultant in the development of the final report of the technical discussions, which will be published in the WHO Chronicle at an early date.

Some New Technical Report Series

Four WHO Expert Committee reports have recently been published, each in the Technical Report Series. "Training of Health Personnel in Health Education of the Public" (No. 156) concerns itself with the types of professional personnel who need training in this subject. Suggestions are given regarding the curriculum for their training.

In "Health Statistics" (No. 164), steps that have been taken toward the establishment of a uniform terminology for morbidity statistics are summarized. Also included is the Third Committee Report on Cancer Statistics. A section on health indicators is interesting and thought-provoking.

The Third Report on the Expert Committee on Plague (No. 165) summarizes present knowledge on the epidemiology and control of this disease, as well as recommendations for coordinated research.

The First Report of the Expert Committee on Respiratory Virus Diseases (No. 170) includes a consideration of the 1957 pandemic of influenza, together with the latest information on viruses in respiratory diseases and their vaccines.

Fifty-Years of Life Conservation

The 50th anniversary of the Health and Welfare program of the Metropolitan Life Insurance Company was celebrated in the home office building on June 4. Tribute was paid to pioneers such as Donald B. Armstrong, M.D., Louis I. Dublin, Ph.D., and particularly Lee K. Frankel, Ph.D., who formulated and launched the program half a century ago. The purposes of the original Welfare Division were established as:

1. The prevention of unnecessary sickness and premature death.
2. Reduction of such sickness and death among policyholders by a campaign of education.
3. Education of policyholders to participate actively in the betterment of community health.
4. Developing Metropolitan agents visiting homes of policyholders weekly into a valuable body of health messengers.
5. Extending cooperation in health promotion to health officials and welfare organizations.
6. Securing constructive health legislation and adequate appropriations for health work

locally and nationally, through cooperation of policyholders, agents and the public.

7. Opening new avenues of disease prevention by demonstration, surveys and research and confirming and applying discoveries in preventive medicine.

Frederick H. Ecker, honorary chairman of the board of Metropolitan, discussed the development of the "Metropolitan's Interest in People" and some of the influences of that interest. An early activity of the division was the tuberculosis control demonstration in Framingham, Mass., which in seven years witnessed a decrease in the tuberculosis death rate from 121 to 38 per 100,000, a sanitation and nutrition demonstration at Thetford Mines, Quebec, and MLI's visiting nurse service which in its 44 years made almost 108 million nursing visits. An interesting sidelight was the need for approval of the courts before the Metropolitan could undertake the new activities outlined for the Welfare Division.

In "Insurance as a Social Program," William P. Shepard, M.D., medical director, told of the company's interest in accident prevention and of the establishment of an award to be presented for the first time in 1960 in recognition of search into the causes of accidents. The National Safety Council will join with the Metropolitan in selecting the winner.

Thomas Rivers, M.D., vice president for medical affairs of the National Foundation, predicted that the next 50 years would see the development, through research, of means for the control of schizophrenia and of marked progress in our understanding and control at least of leukemia among the cancer group.

Howard A. Rusk, M.D., director, Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, called for support of medical science as a means toward the development of understanding among nations of the world. He also warned that unless energetic steps are taken to change the present trend, by 1980 for every able-bodied person there will be one disabled person, one chronically ill, and one over 65.

PERSONALS

FREDERICK F. ALDRIDGE,* engineer director, has been transferred from the San Francisco Regional Office, Public Health Service, to Washington, D. C., as chief sanitary engineer, Division of International Health, Bureau of State Services. He has been succeeded in San Francisco by FREDERICK S. KENT, M.P.H.*

OTIS L. ANDERSON, M.D.,* Assistant Surgeon General for Personnel and Training, Public Health Service, retired, has been named a medical liaison representative, Washington Office, American Medical Association.

SOLOMON J. AXELROD, M.D., M.P.H.,* former associate director, has succeeded NATHAN SINAI, Dr.P.H.,* as director, Bureau of Public Health Economics, University of Michigan School of Public Health, in order that the latter may, as he requested, devote more time to teaching, research, and writing.

GEORGE HENRY BECKER, M.D.,* director, Bureau of Communicable Diseases, San Francisco Department of Public Health, has resigned to enter the private practice of medicine.

DANIEL BERGSMA, M.D., M.P.H.,* New Jersey state health commissioner, has resigned to become associate medical director of the National Foundation.

J. MORRISON BRADY, M.D., has succeeded MELVILLE MANSON, M.D.,* retired, as medical director, Muscular Dystrophy Associations of America.

CHARLES M. CARPENTER, M.D.,* professor of infectious diseases and chairman of department, School of Medicine, University of California, Los Angeles, has been awarded a fellowship from the Del Amo Foundation for six weeks of lecturing and research on brucellosis in Spain.

JAMES PAYSON DIXON, JR., M.D.,* commissioner of public health, Philadelphia (Pa.), and professor of preventive medicine, University of Pennsylvania, has resigned to become the 15th president of Antioch College, Yellow Springs, Ohio, Dr. Dixon's alma mater.

HAROLD F. DORN, Ph.D.,† chief, Biometrics Branch, Division of Research Services, National Institutes of Health, delivered the 102nd Cutter Lecture on Preventive Medi-

* Fellow.
† Member.

cine of the Harvard School of Public Health on May 19.

FRATIS L. DUFF, COL., MC,† Commander, branch facility, School of Aviation Medicine, Gunter Air Force Base, Ala., has been awarded an Oak Leaf Cluster to his Legion of Merit.

HAROLD V. ELLINGSON, COL., MC,† formerly the School's director of education and plans, at Randolph Air Force Base, Texas, has been made Commander, Gunter Branch, School of Aviation Medicine, Gunter AFB, Ala.

HOWARD W. ENNES, JR., M.P.H.,* director, Bureau of Public Health, The Equitable Life Assurance Society of the United States, and vice-president, International Union for Health Education of the Public, was presented the grand silver medal of the City of Paris by Dr. Pierre Devraigne, president of Municipal Council, in a ceremony preceding the conference of the International Union in Dusseldorf in May.

ALVIN C. EURICH, Ph.D., executive director, Education Division, the Ford Foundation, and vice-president, The Fund for the Advancement of Education, has been appointed chairman of the Commission on Health Careers, National Health Council, succeeding LEONARD A. SCHEELE, M.D.,* president, Warner-Chilcott Laboratories.

WILLIAM C. GIBSON, M.P.H.,* professor of public health engineering, University of Michigan School of Public Health, is on a two-month leave on a WHO faculty travel fellowship that is taking him to Switzerland, Turkey, Israel, Ethiopia, and Liberia.

ALVIN I. GOLDFARB, M.D.,† consultant on services for the aged, New York State Department of Mental Hygiene, was one of three persons to receive a recent annual award for achievement in the field of welfare of the aged, of District 65, Retail, Wholesale and Department Store Union, AFL-CIO. The others were MICHAEL M. DACSO, M.D.,† Department of Physical Medicine and Rehabilitation, Goldwater Memorial Hospital, and G. WARFIELD HOBBS, III, National Committee for the Aging.

FRANZ GOLDMANN, M.D.,* associate professor of medical care, emeritus, Harvard School of Public Health, and director, Health Study, Council of Jewish Federations and Welfare Funds, New York, is the first recipient of the Fund's recently established Ernst P. Boas Award for contributions to the advancement of social medicine.

FRANCES HASSETT, former health educator, Middlesex Health Association, Somerville, Mass., is now public relations assistant, New York Tuberculosis and Health Association, New York City.

G. R. HERZIK, JR.,† former chief engineer, has succeeded the late VICTOR EHLERS as director, Division of Sanitary Engineering, Texas State Department of Health.

SENATOR LISTER HILL, chairman of the Senate Labor and Public Welfare Committee, has received the first annual "Health-USA" award given by the Washington Board of Trade and the Medical Society of the District of Columbia.

HENRY A. HOLLE, M.D.,* who was on loan by the Public Health Service for five years as state health commissioner for Texas, has been recalled to active duty. He is now serving as medical officer in charge of the U. S. Quarantine Station, Rosebank, Staten Island, N. Y. In this position he serves as quarantine officer for the Port of New York, covering both air and sea travel.

ROSCOE P. KANDLE, M.D., M.P.H.,* former first deputy commissioner, New York City Health Department, is now commissioner, New Jersey State Health Department.

SIMON J. KALISH, D.V.M., M.P.H.,† former public health veterinarian, is now associate veterinary medical director, Pfizer Laboratories, division of Chas. Pfizer & Co., Inc., Brooklyn, N. Y.

EDWARD KUCK, M.D.,† chief medical director, The Union Central Life Insurance Company, Cincinnati, Ohio, has retired.

RALPH E. LEWIS, M.P.H.,† former health educator, Saginaw (Mich.) Health Department, is now senior health educator, Michigan Tuberculosis Association.

H. H. MADAMS,† former health officer for the Suva City Council in Fiji, is now executive secretary, Fiji Housing Authority, Victoria Arcade, Suva, Fiji.

WILLIAM E. MAYER, M.D., former psychiatric resident, Langley-Porter Clinic, University of California, is now psychiatrist for the island of Hawaii, Hawaii State Department of Health

IWAO M. MORIYAMA, Ph.D.,* chief, Mortality Analysis Section, National Office of Vital Statistics, recently received a Distinguished Service Award, the highest honor bestowed by the Department of Health, Education, and Welfare.

WARD L. OLIVER, M.D., former part-time acting health commissioner of Schoharie County and practicing physician of Cobleskill, has been appointed assistant director, Bureau of Chronic Diseases and Geriatrics, New York State Health Department.

* Fellow.
† Member.

ANGELO PARENTE, D.D.S., a practicing dentist, has been appointed public health dentist, Rhode Island State Department of Health, succeeding the late THOMAS W. CLUNE, D.D.S.

FRANCES K. PETERSON has succeeded as director, Department of Diploma and Associate Degree Programs, National League for Nursing, MILDRED E. SCHWIER who resigned to become director of nursing, Rhode Island Hospital, Providence.

WILLIAM J. PYLES, M.D., former assistant clinical professor of medicine, Columbia University College of Physicians and Surgeons, has been appointed medical director, New York Heart Association, succeeding D. F. MILAM, M.D., M.P.H.,* retired.

ELIZABETH LOUISE RATCLIFF, M.P.H.,† former health educator, Tuberculosis and Health Association of the New Haven area, is now with the Tuberculosis Association of Pittsburgh, Pa.

JAY L. RONEY, former director, Bureau of Public Assistance, Department of Health, Education, and Welfare, has been appointed director, Public Welfare Project on Aging, American Public Welfare Association.

JESSE E. SIMONS, M.D.,† director, Division of Mental Health, Wyoming Department of Health, has resigned in order to enter the private practice of psychiatry.

RUTH E. SIMONSON, R.N., M.P.H.,* mental health consultant, Public Health Service, Region II, is on leave to the University of California School of Public Health, as visiting professor in public health nursing administration for one year from August 1.

LUTHER S. STANDIFER,† former director, Sanitation Division, Knox County (Tenn.) Health Department, has been appointed sanitary engineer in project AMRO-95, to head an intercountry program in environmental sanitation embracing almost all of the 22 health departments in the Caribbean area, with headquarters in Georgetown, British Guiana.

NORMAN H. TOPPING, M.D.,† president, University of Southern California, is chairman of a 14-member Medical Advisory Committee on Research to pass on all grants for research projects made by the National Foundation.

FANG-CHIN TSAI, M.D., M.P.H.,* former malariologist in the Regional Office for Southeast Asia, WHO, has been transferred to Jalalabad, Afghanistan.

WARREN T. VAUGHAN, JR., M.D.,* director, Children's Unit, Metropolitan State Hospital of Massachusetts, has been appointed director, mental health program, Western Interstate Commission for Higher Education, with offices at the University of Colorado campus, Boulder, Colo.

PAUL A. WAGNER, former president of Video Pictures, has been named director of public information, a newly created department of the National Foundation, New York City.

R. R. WEMPLE, M.D., former medical officer in charge, Crow Agency, Division of Indian Health, Public Health Service, is now health officer, Public Health District No. 1, including Big Horn and Rosebud Counties and the Crow and Cheyenne Indian Reservations, Hardin, Mont.

WARREN WINKELSTEIN, JR., M.D., M.P.H.,* former chief, Department of Epidemiology, Chronic Disease Research Institute, Buffalo, N. Y., has been named first deputy commissioner, Erie County Health Department, succeeding WILLIAM E. MOSHER, advanced to commissioner.

* Fellow.
† Member.

DEATHS

LORENZ S. BAUR, Ph.D.,† clinical research adviser, Similac Division, Ross Laboratories, Columbus, Ohio (Food and Nutrition Section).

JEROME W. BROWER,* deputy executive officer, Minnesota Department of Health (St. Paul) on May 28 at the age of 49 (Unaffiliated).

JOHN H. FOUNTAIN, M.D., M.P.H.,* director, Division of Tuberculosis Control, Seattle (Wash.) Health Department (Health Officers Section).

CHARLES G. MERRELL,* retired, Bryn Athyn, Pa., (Laboratory Section).

EMILIE G. ROBSON, R.N.,* retired in 1949 and a charter member of the APHA, on April 5 (Public Health Nursing Section).

COLONEL LESTER P. VEIGEL, MC.,† Hqs. Pacific Air Forces, San Francisco, Calif., on June 3 (Health Officers Section).

CONFERENCES AND DATES

American Public Health Association, Eighty-Seventh Annual Meeting, Atlantic City, N. J., October 19-23.

State and Regional Public Health Meetings—August, September, and October:

Cuba Public Health Association. Havana. August.

Florida Public Health Association. Hotel Hillsborough, Tampa. September 24–26.

Maryland Public Health Association. Tidewater Inn, Easton. October 9.

Massachusetts Public Health Association.

University of Massachusetts, Amherst. September 2–3.

Minnesota Public Health Association. Raddison Hotel, Minneapolis. September 24–25.

Nebraska Public Health Association. Hotel Cornhusker, Lincoln. September 23–24.

North Carolina Public Health Association. Robert E. Lee Hotel, Winston-Salem. September 24–26.

Pennsylvania Public Health Association. University Park, Pa. August 16–20.

South Dakota Public Health Association. Hotel Cataract, Sioux Falls, September 30-October 2.

Tennessee Public Health Association. Maxwell House, Nashville. September 30-October 2.

Meetings of Other Organizations:

American Academy of Pediatrics. Palmer House, Chicago, Ill. October 3–8.

American Association of Medical Record Librarians. Statler Hotel, Boston, Mass. October 13–16.

American Cancer Society. Biltmore Hotel, New York, N. Y. October 26–27.

American Dental Association (Centennial Session). Coliseum, New York, N. Y. September 14–18.

American Dietetic Association. Shrine Convention Hall and Auditorium, Los Angeles, Calif. August 25–28.

American Heart Association. Bellevue Stratford, Philadelphia, Pa. October 23–27.

American Hospital Association. Coliseum and Statler-Hilton Hotel, New York, N. Y. August 24–27.

American Occupational Therapy Association. Morrison Hotel, Chicago, Ill. October 16–23.

American Pharmaceutical Association. Cincinnati, Ohio. August 16–20.

Association of American Medical Colleges. Edgewater Beach Hotel, Chicago, Ill. October 28–November 4.

Association of State and Territorial Health Officers. Washington, D. C. October 12–16 (tentative).

Industrial and Building Sanitation-Maintenance Show and Conference. (Fourth). New York, N. Y. September 22–24.

International Congress on Air Pollution. New York, N. Y. September 9–10.

Muscular Dystrophy Associations of America. New York, N. Y. October 13.

National Association for Retarded Children. Netherlands-Hilton Hotel, Cincinnati, Ohio. October 21–24.

National Conference on Physicians and Schools. Moraine-on-the-Lake Hotel, Highland Park, Ill. October 13–15.

National Recreation Association. Chicago, Ill. September 27–October 2.

National Rehabilitation Association. Statler Hotel, Boston, Mass. October 26–28.

National Safety Council. Conrad Hilton Hotel, Chicago, Ill. October 19–23.

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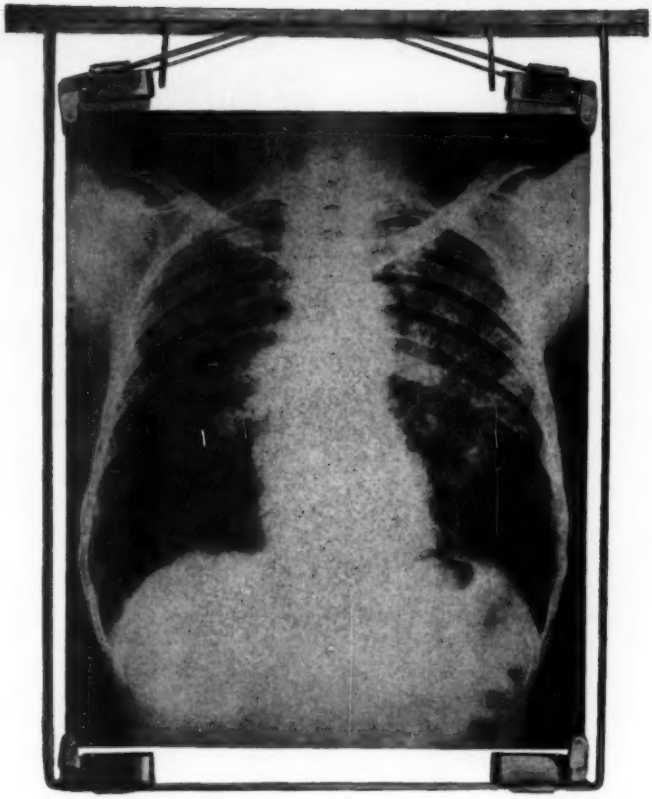

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